44V-048

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

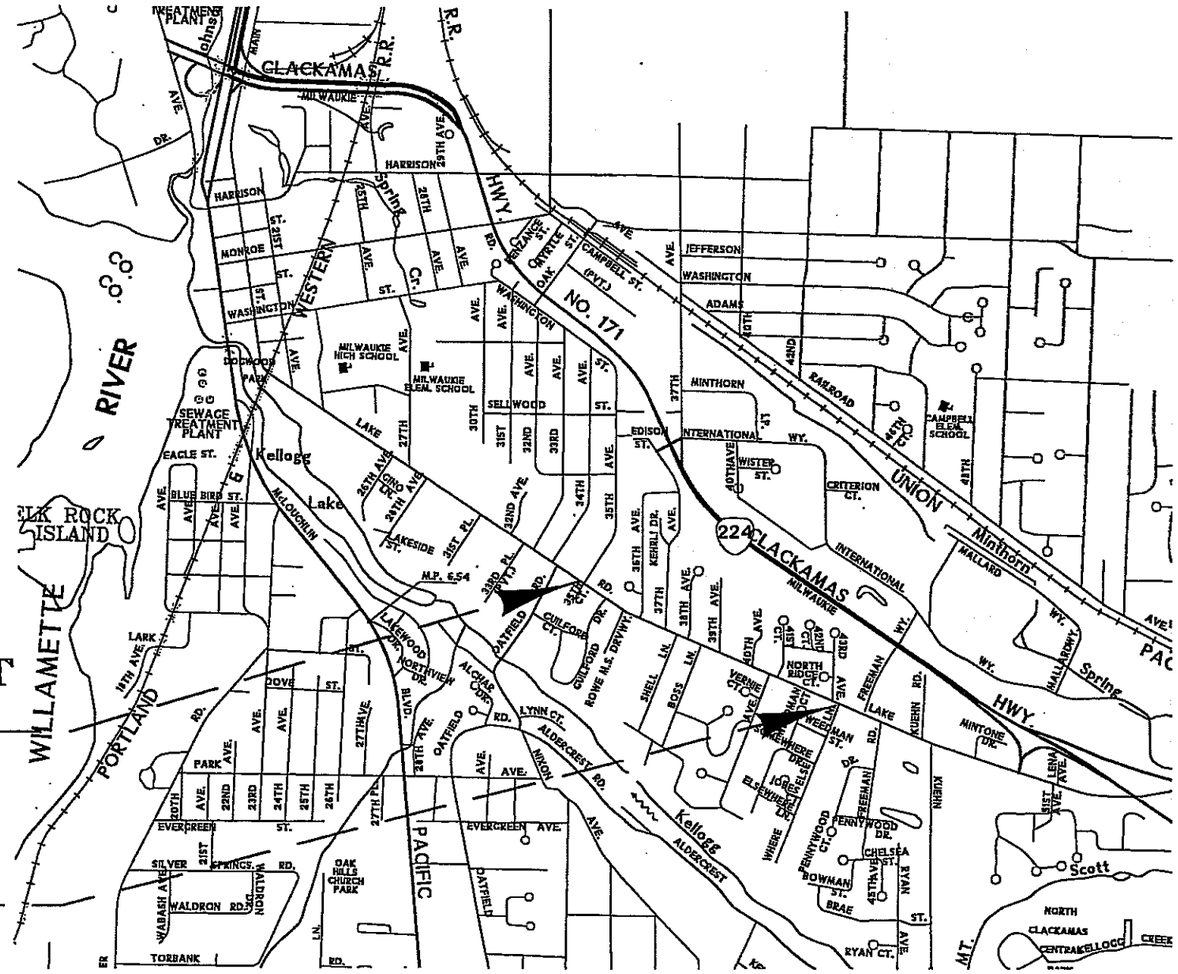
GRADING, DRAINAGE, PAVING AND SIGNING

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)

SE LAKE ROAD

CLACKAMAS COUNTY

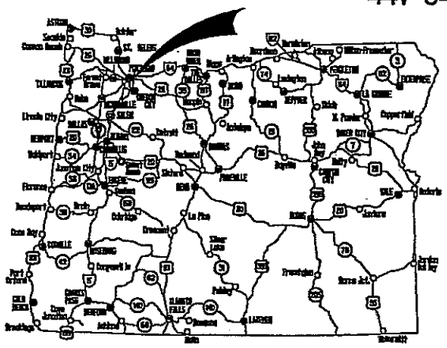
MARCH 2011



BEGINNING OF PROJECT
X-HPP-4865 (014)
STA. "L" 53+68.00

END OF PROJECT
X-HPP-4865 (014)
STA. "L" 81+49.42

T. 1,2 S., R. 1,2 E., W.M.



Overall Length Of Project - 0.59 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

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

OREGON TRANSPORTATION COMMISSION

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

These plans were developed using AASHTO design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority

Approving Authority: 02/09/11
Signature & date

Darrin B. Stairs, PM
Print name and title

Concurrence by ODOT Chief Engineer

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-HPP-4865 (014)	1

\\OTAKTREE\LKO01RICOH5500.printers.LKO.OTAK L:\Project\14300\14350\Dwg\C350C01.dwg 2/9/2011 12:02 PM Sadie

INDEX OF SHEETS, CONT'D.

SHEET NO.	DESCRIPTION
1B	Layout Sheet
2 Thru 2A-3	Typical Sections
2B Thru 2B-4	Roadway Details
2B-5 Thru 2B-8	Driveway Details
2B-9	Sidewalk Details
2B-10, 2B-11	Bioretention Facility Details
2B-12	Bioretention Swale / Drainage Details
2B-13	Median Island Details
2C	Detour Plan
2C-2 Thru 2C-10	Traffic Control Plan
2D, 2D-1	Pipe Data Sheet
3	General Construction - Sta. "L" 53+50 to 58+50
3A	Drainage and Utilities - Sta. "L" 53+50 to 58+50
3B	Profile - Sta. "L" 54+00 to 58+50
4	General Construction - Sta. "L" 58+50 to 63+00
4A	Drainage and Utilities - Sta. "L" 58+50 to 63+00
4B	Profile - Sta. "L" 58+50 to 63+00
5	General Construction - Sta. "L" 63+00 to 67+50
5A	Drainage and Utilities- Sta. "L" 63+00 to 67+50
5B	Profile - Sta. "L" 63+00 to 67+50
6	General Construction - Sta. "L" 67+50 to 72+00
6A	Drainage and Utilities - Sta. "L" 67+50 to 72+00
6B	Profile - Sta. "L" 67+50 to 72+00
7	General Construction - Sta. "L" 72+00 to 76+50
7A	Drainage and Utilities - Sta. "L" 72+00 to 76+50
7B	Profile - Sta. "L" 72+00 to 76+50
8	General Construction - Sta. "L" 76+50 to 81+00
8A	Drainage and Utilities - Sta. "L" 76+50 to 81+00
8B	Profile - Sta. "L" 76+50 to 81+00
9	General Construction - Sta. "L" 81+00 to 82+00
9A	Drainage and Utilities - Sta. "L" 81+00 to 82+00
9B	Profile - Sta. "L" 81+00 to 82+00
10	General Construction - SE Guilford Dr.
11	General Construction - SE 36th Ave.
12	General Construction - SE Shell Ln./SE 37th Ave.
13	General Construction - SE Boss Ln./SE 38th Ave.
14	General Construction - SE 40th Ave.
15	General Construction - SE Vernie Ave.
16	General Construction - SE 41st Court
17	General Construction - SE 43rd Ave.
18	General Construction - Sta. "SD-A" 1+00 to 6+50
18A	Profile - Sta. "SD-A" 1+00 to 6+50
19	General Construction - Sta. "SD-B" 1+00 to 4+00
20	General Construction - Sta. "SD-B" 4+00 to 7+60
21	General Construction - Sta. "SD-B" 7+60 to 9+13
GA	Erosion Control - Sta. "L" 50+00 to 62+00
GA-2	Erosion Control - Sta. "L" 62+00 to 82+00
GA-3	Erosion Control Private Driveway and Boss Ln
GA-4 Thru GA-6	Erosion Control Details

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GC	Modular Walls "C1" & "C2" Plan and Elevation
GC-2	Modular Walls "C3", "C4" & "C5" Plan and Elevation
	STRUCTURE NO. 21553 - WALL "C6"
GC-3	Modular Walls "C6", "C7" & "C8" Plan and Elevation
	STRUCTURE NO. 21554 - WALL "F1"
GC-4	Modular Wall "F1" Plan and Elevation
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GC-5	Modular Wall "F2" Plan and Elevation
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ROADSIDE DEVELOPMENT	
GN	Planting Details
GN-2	Plant List and Notes
GN-3	Bid Log
GN-4	Planting Plan A Sta. "L" 53+80 to 58+85
GN-5	Planting Plan B Sta. "L" 58+85 to 63+50
GN-6	Planting Plan C Sta. "L" 65+75 to 66+40 Sta. "L" 71+75 to 74+00
GN-7	Planting Plan D Sta. "L" 75+50 to 78+55
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ST thru ST-3	Pavement Marking Plan
ST-4	Pavement Marking Details

PERMANENT SIGNING PLANS	
SN Thru SN-3	Signing Plan
SN-4 Thru SN-5	Signing Details
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SN-9	School Zone Flasher

City of Milwaukie Standard Details

Dwg No 300	- Standard Manhole for -27" Pipe
Dwg No 305	- Manhole Step
Dwg No 400	- Fire Hydrant Installation
Dwg No 401	- Standard 1" Water Service
Dwg No 409	- Standard Volve Box Detail
Dwg No 505	- Sidewalk Curb Tight
Dwg No 513	- Street Monument
Dwg No 600	- G-2 Catchbasin
Dwg No 603	- G-2 Catchbasin Flow Through
Dwg No 604A, B	- Curb Inlet Catchbasin - Sidewalk
Dwg No 605	- Catchbasin - Ditch Inlet
Dwg No 606	- G-2 Catchbasin Frame
Dwg No 607	- G-2 Catchbasin Grate
Dwg No 611	- Sedimentation Manhole
Dwg No 615	- Manhole Base
Dwg No 616	- Manhole Riser Details
Dwg No 618	- Storm Manhole Lid

Standard Drg. Nos.

RD100	- Mailbox Support
RD120	- Concrete Stairway
RD326	- Coupling Bands For Corrugated Metal Pipe
RD346	- Large Precast Manhole
RD610	- Asphalt Pavement Details
RD700	- Curbs
RD715	- Approaches And Non-Sidewalk Driveways
RD720	- Sidewalks
RD750	- Curb Line Sidewalk Driveway or Alleys (Options M&N), Local Jurisdictions
RD755	- Sidewalk Ramp Details
RD756	- Sidewalk Ramp Placement Options, Cub Radii ≤ 15'
RD757	- Sidewalk Ramp Placement Options, Curb Radii > 15'
RD1000	- Construction Entrances
TM200	- Sign Installation Details
TM201	- Miscellaneous Sign Placement Details
TM206	- Sign Bracing Detail
TM223	- Directional Sign Layout
TM230	- Mounting Details For Removable Legend
TM233	- Mounting Details For Removable Legend
TM457	- Vehicle, Ped. Signal & Push Button Mounting Details
TM492	- Ramp Meter Pedestal Details
TM500	- Pavement Marking Standard Details
TM501	- Pavement Marking Standard Details
TM502	- Pavement Marking Standard Details
TM503	- Pavement Marking Standard Details
TM525	- Turn Arrow Marking Details
TM530	- Intersection Pavement Markings
TM539	- Median And Left Turn Channelization Details
TM561	- Left Turn Lane, Centerline, & Medians
TM670	- Perm. Signing Wood Post Supports Sizing Charts
TM671	- 3 Second Gust Wind Speed Isotach
TM675	- Extruded Aluminum Panels
TM676	- Sign Attachments
TM677	- Sign Mounts
TM679	- Signal Mast Arm Street Name Sign Mounts
TM680	- Signal Pole Mounts
TM681	- Square Tube Sign Supports
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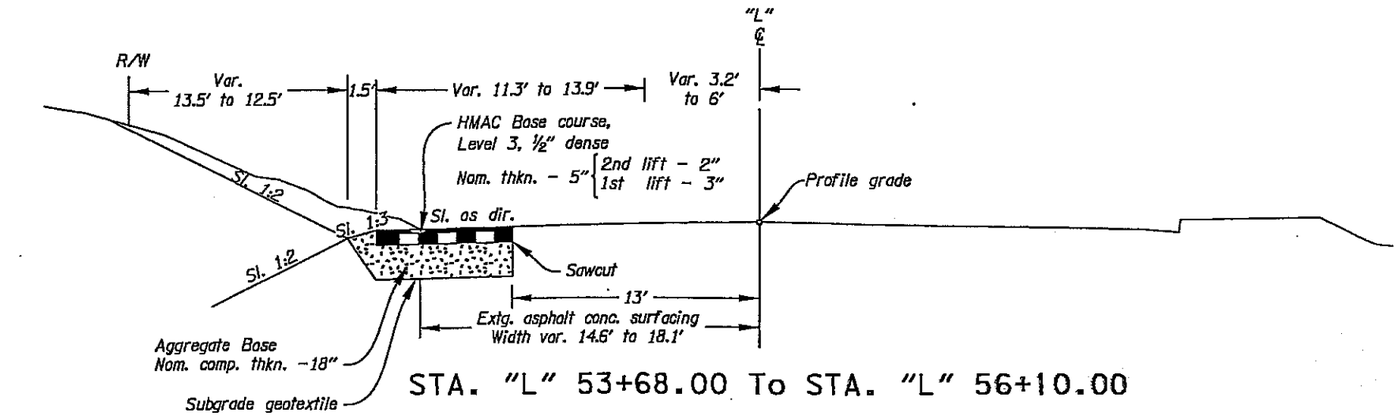
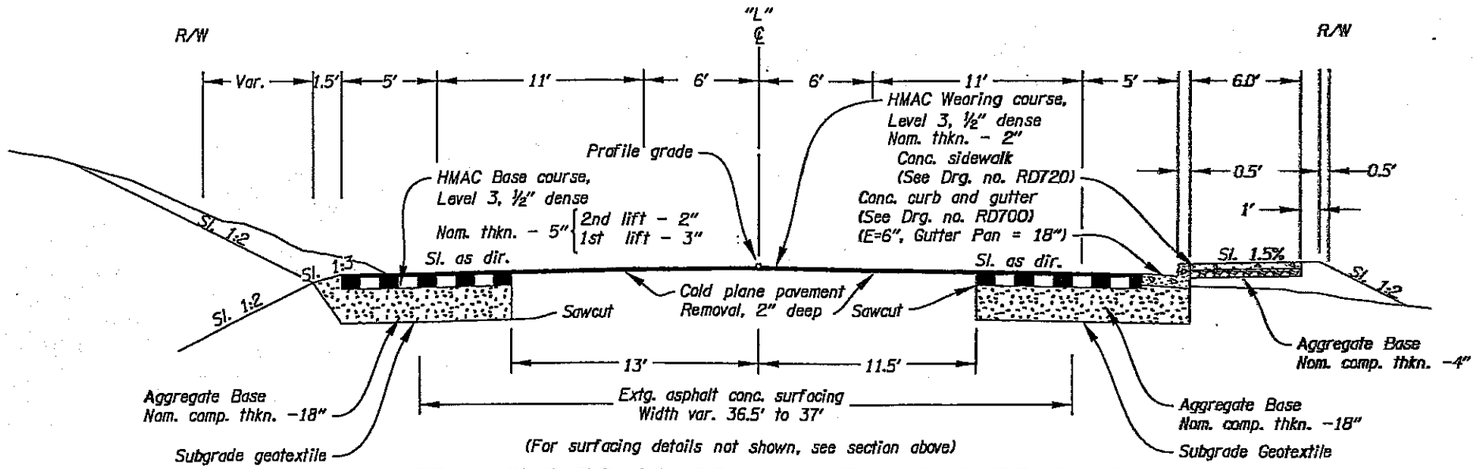
TM688	- Perforated Steel Square Tube (PSST) Slip Base Foundation
TM800	- Tables, Abrut Edge, and PCMS Details
TM820	- Temporary Barricades
TM821	- Temporary Sign Supports
TM840	- Closure Details
TM841	- Intersection Work Zone Details
TM842	- Signalized Intersection Details
TM850	- 2 lane, 2 way Roadways
TM851	- Non-Freeway Multi-Lane Sections

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-HPP-4865 (014)	1A



STA. "L" 53+68.00 To STA. "L" 56+10.00



STA. "L" 56+10.00 To STA. "L" 57+10.00

NOTE:
1. Side-slopes are shown as vert. to horiz.

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
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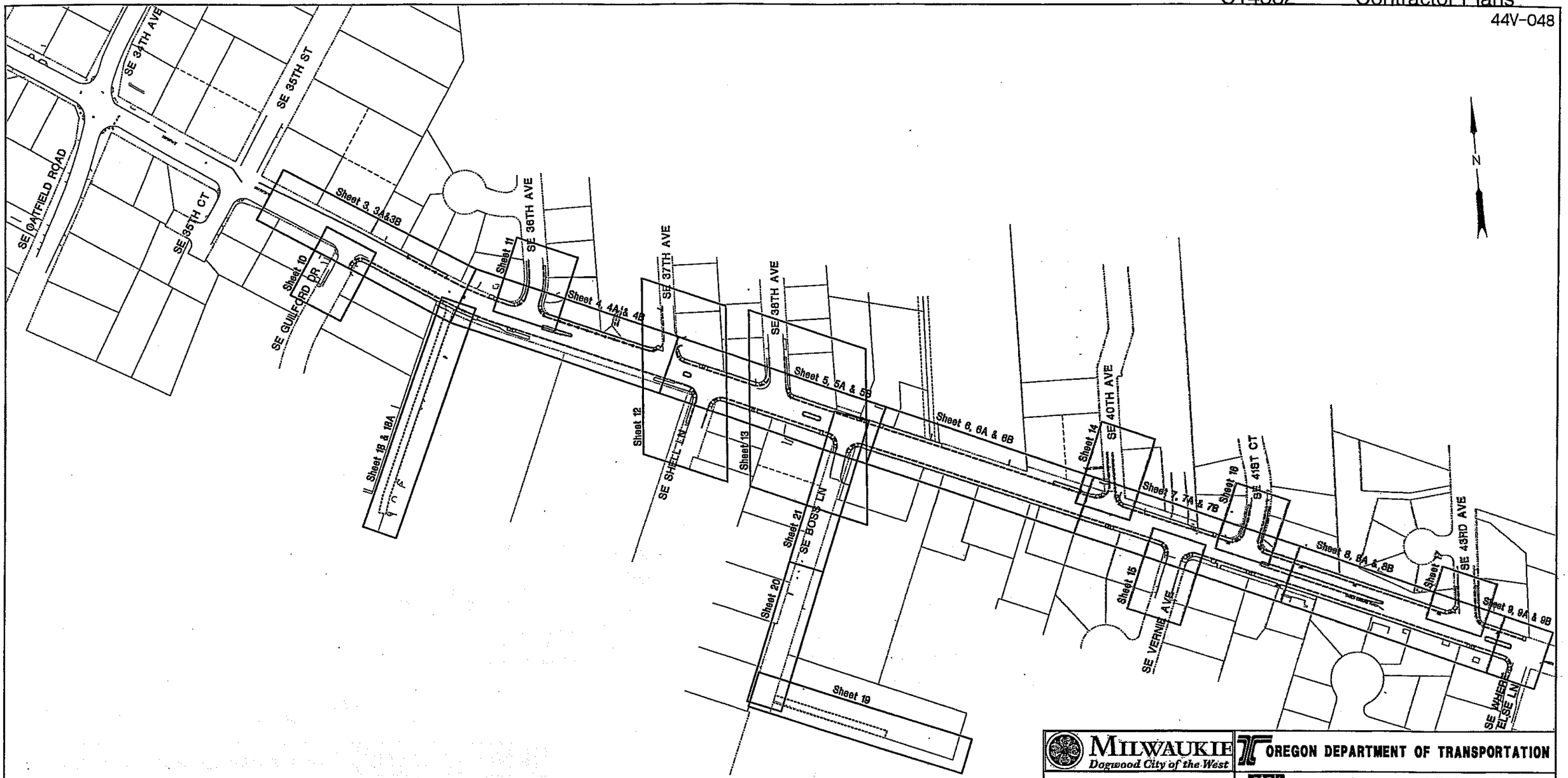
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

TYPICAL SECTIONS

SHEET NO. 2



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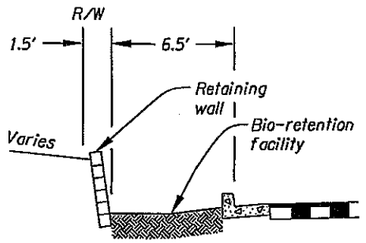
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

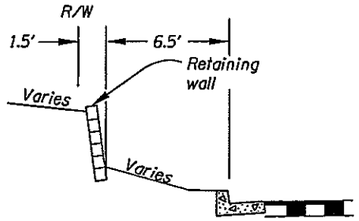
LAYOUT SHEET

SHEET NO. 1B

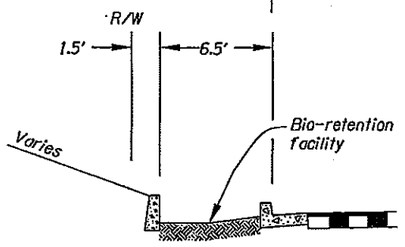
\\OTAKTREE\lko5hp8150n.printers.LKO.OTAK L:\Project\14300\14350\Dwg\C350c01B.dwg 1/5/2011 4:35 PM Mottk



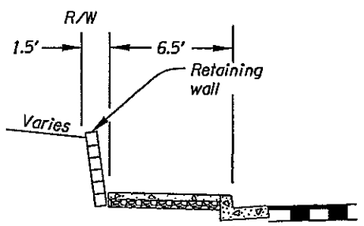
STA. 57+09.50 To 58+01.00
72+78.02 To 73+22.79



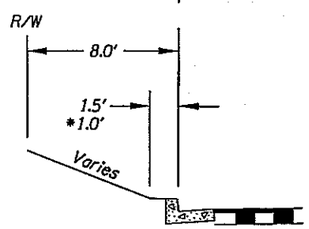
STA. 58+01.00 To 58+15.62
58+86.57 To 59+00.05



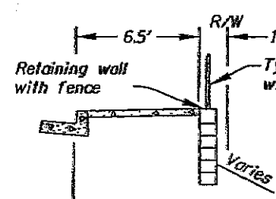
STA. 60+28.55 To 62+49.72
71+26.50 To 71+85.50



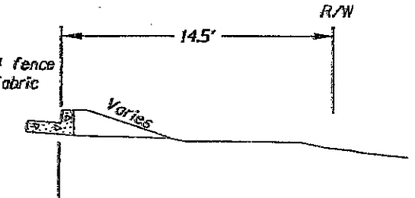
STA. 59+00.05 To 59+19.50
64+73.20 To 64+77.97
67+05.07 To 67+20.43
67+51.07 To 67+59.07
72+78.02 To 73+22.79
78+77.03 To 79+76.07



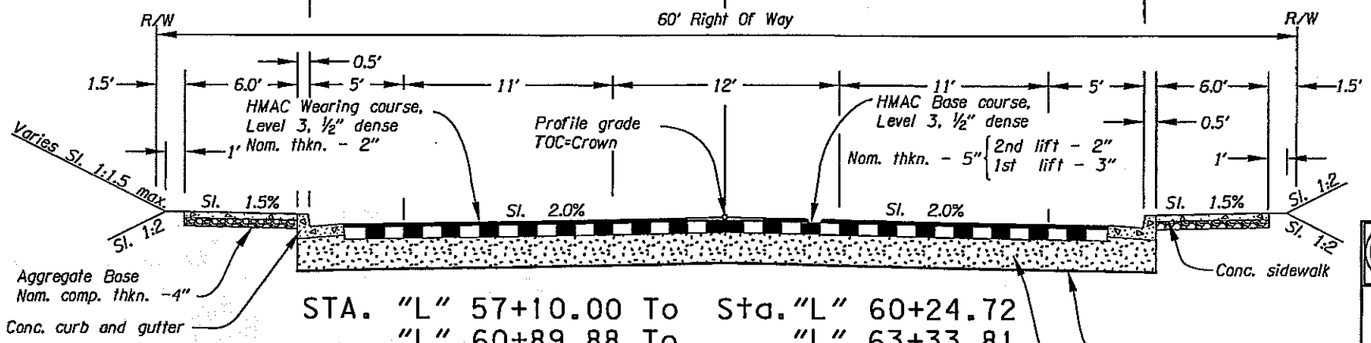
STA. 58+15.62 To 58+86.57
68+83.16 To 71+26.50
71+85.50 To 72+13.24
*67+59.00 To 67+70.30



STA. 75+70.70 To 81+22.94



STA. 59+74.84 To 63+19.58



STA. "L" 57+10.00 To Sta. "L" 60+24.72
"L" 60+89.88 To "L" 63+33.81
"L" 63+50.00 To "L" 65+92.36
"L" 66+31.16 To "L" 75+84.97
"L" 78+50.18 To "L" 80+74.84
"L" 81+32.68 To "L" 81+50.00

NOTE:
1. Side-slopes are shown as vert. to horiz.

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

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51051PE
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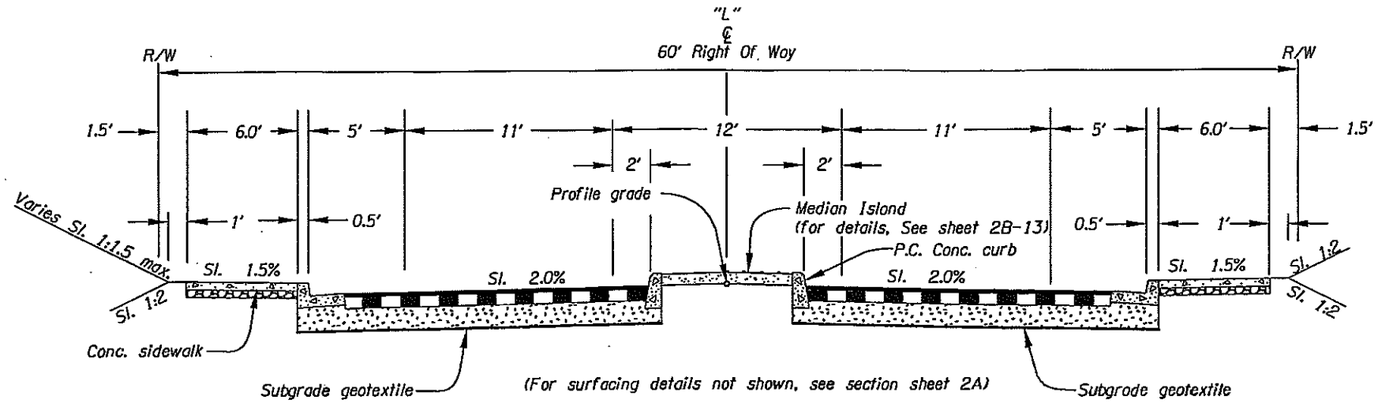
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

TYPICAL SECTIONS

SHEET NO. 2A



STA. "L" 60+24.72 To STA. "L" 60+89.88
"L" 63+33.81 To "L" 63+50.00
"L" 65+92.36 To "L" 66+31.16
"L" 75+84.97 To "L" 78+50.18
"L" 80+74.84 To "L" 81+32.68

NOTE:
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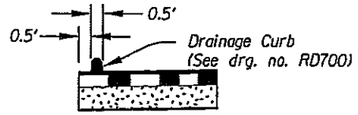
CLACKAMAS COUNTY

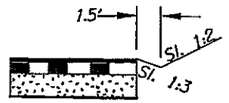
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinoso, PE
Drafted By - Sadie Reiter

TYPICAL SECTIONS

SHEET NO. 2A-2



STA. "40c" 215+62.96 To STA."40c" 216+85.49



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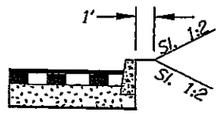
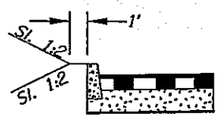
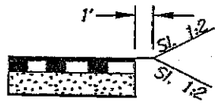


STA. "37" 171+04.60 To STA."37" 171+81.67

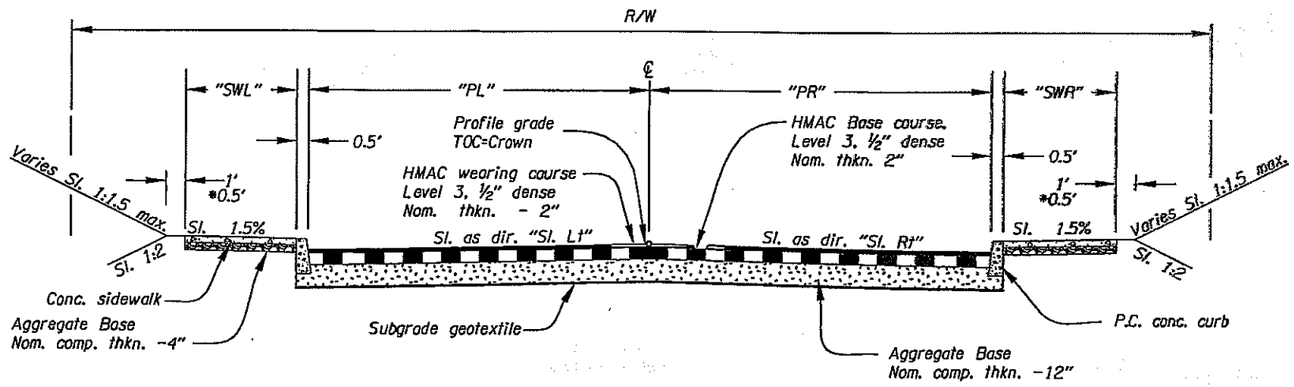


STA. "37" 160+00.00 To STA."37" 161+31.14
"Bc" 195+21.09 To STA."Bc" 196+28.88



STA. "37" 160+00.00 To STA."37" 161+31.14
"S" 170+86.66 To "S" 171+04.60
"Bc" 195+21.09 To "Bc" 196+28.88

R/W = Right of way
"SWL" = Sidewalk left
"PL" = Pavement left
"PR" = Pavement right
"SWR" = Sidewalk right
Sl. = Slope



SIDE STREET DIMENSION MATRIX

ALIGNMENT	R/W	"SWL"	"PL"	"PR"	"SWR"	Sl. Lt.	Sl. Rt.
"36"	50	4.0	15	15	4.0	2.0%	1.0%
"37"	30	--	12	12	--	2.0%	2.0%
"S"	50	5.5	14	14	--	1.0%	1.0%
"38"	50	4.0	16	16	3.5	2.0%	2.0%
"Bc"	40	--	11	11	--	2.0%	2.0%
"40c"	40	--	5	5	--	1.0%	-1.0%
* "41"	50	5.0	16	16	5.0	2.0%	2.0%
* "43"	50	5.0	17	17	6.0	2.0%	2.0%

NOTE: All table entries are in feet, unless otherwise noted.

STA.	"36"	150+00.00	To	STA.	"36"	151+18.00
	"37"	160+00.00	To		"37"	161+31.14
	"S"	170+86.66	To		"S"	171+81.67
	"38"	180+00.00	To		"38"	180+98.23
	"Bc"	195+21.09	To		"Bc"	196+28.88
	"40c"	215+00.00	To		"40c"	216+85.49
	"41"	230+00.00	To		"41"	231+12.21
	"42"	240+00.00	To		"42"	240+96.63

NOTE:
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SE LAKE ROAD
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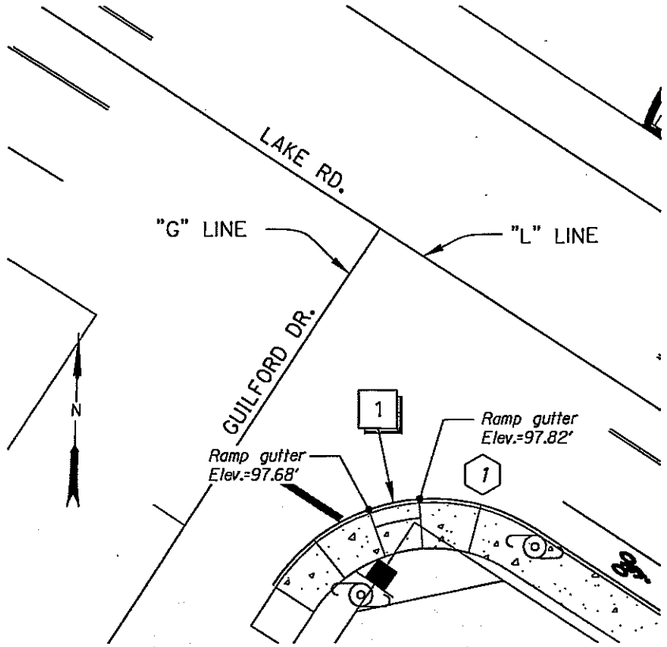
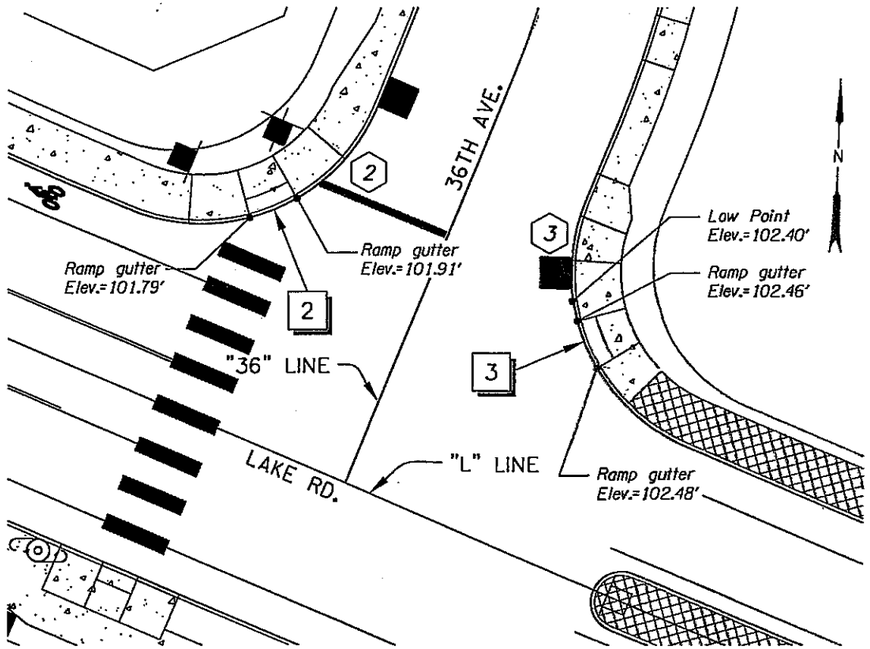
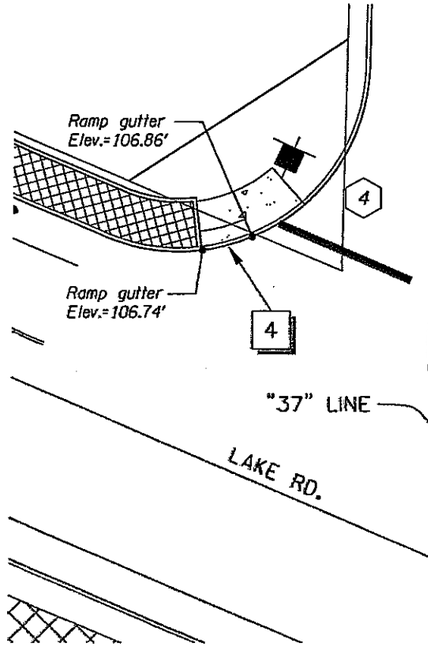
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

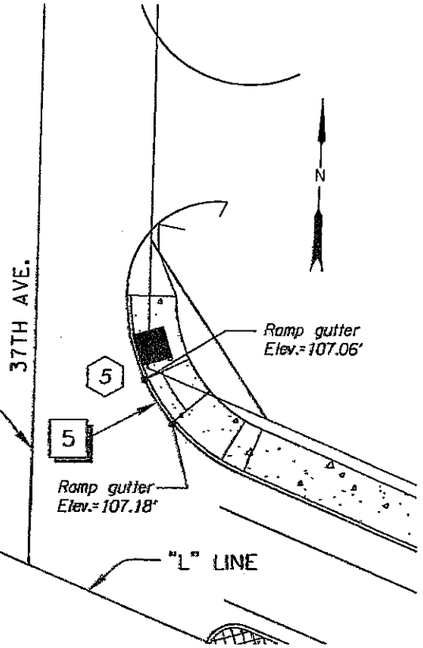
TYPICAL SECTIONS

SHEET NO. 2A-3









	PC Station at Beginning △	PT Station at Ending △	Radius	Length	Delta	Tangent	Gutterline Elevation Begin △	1/4 △	1/2 △	3/4 △	End △
1	"G" Line 141+49.78 (14.00' Rt.)	"L" Line 56+35.69 (22.00 Rt.)	25 Ft.	39.27'	89°59'39"	25.00'	95.59	96.78	97.75	98.42	98.69
2	"36" Line 150+47.55 (15.00' Lt.)	"L" Line 59+48.54 (22.00 Lt.)	25 Ft.	39.61'	90°46'55"	25.34'	102.83	102.25	101.85	101.57	101.31
3	"L" Line 60+58.55 (22.00' Rt.)	"36" Line 150+46.46 (15.00' Rt.)	25 Ft.	38.93'	89°13'05"	24.66'	102.62	102.50	102.38	102.45	102.88
4	"37" Line 160+65.36 (12.00' Lt.)	"L" Line 62+49.72 (22.00 Lt.)	25 Ft.	48.76'	111°44'55"	36.89'	108.59	107.66	107.02	106.58	106.22
5	"L" Line 63+29.40 (22.00' Lt.)	"37" Line 160+35.84 (12.00 Rt.)	25 Ft.	29.78'	68°15'05"	16.94'	107.52	107.37	107.12	106.93	106.96

	Curb Ramp ℄ Station and Offset
1	"L" Line 56+18.01 (29.33' Rt.)
2	"L" Line 59+66.45 (29.19' Lt.)
3	"L" Line 60+07.31 (33.81' Lt.)
4	"L" Line 62+70.42 (32.97' Lt.)
5	"L" Line 63+15.37 (26.30' Lt.)

NOTE:
Grade AC Paving within 4ft. of pedestrian ramp as necessary to achieve elevations shown. If no ramp elevations are provided, grade AC paving as necessary to achieve 2% max. crosslope on ramp.

MILWAUKIE
Dogwood City of the West

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

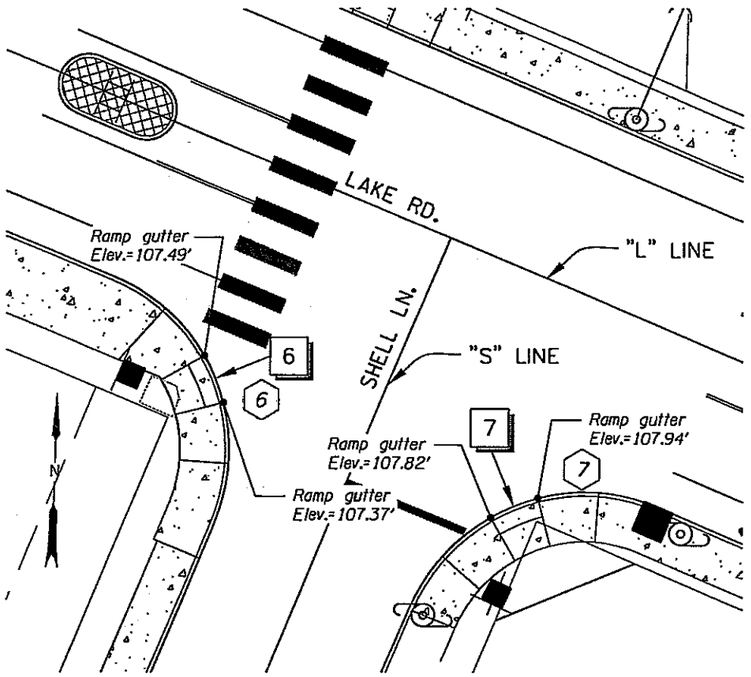
OREGON DEPARTMENT OF TRANSPORTATION

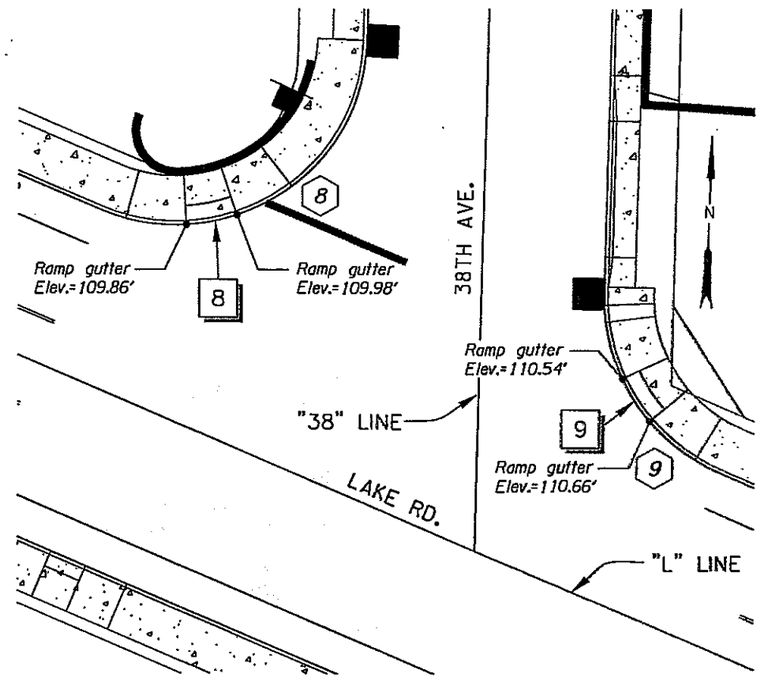
Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

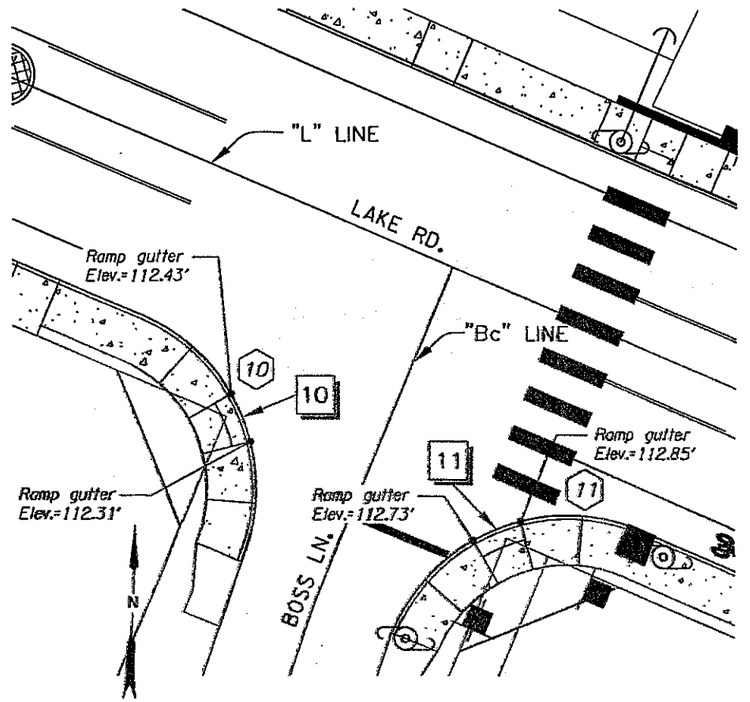
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

ROADWAY DETAILS

SHEET NO. 2B







	PC Station at Beginning Δ	PT Station at Ending Δ	Radius	Length	Delta	Tangent	Gutter Elevation Begin Δ	1/4 Δ	1/2 Δ	3/4 Δ	End Δ
6	"L" Line 63+50.86 (22.00' Rt.)	"S" Line 171+34.95 (14.00 Lt.)	25 Ft.	39.09'	89°35'03"	24.82'	107.56	107.63	107.43	106.87	105.84
7	"S" Line 171+34.38 (14.00' Rt.)	"L" Line 64+28.86 (22.00 Rt.)	25 Ft.	39.45'	90°24'56"	25.18'	105.78	106.97	107.88	108.41	108.73
8	"38" Line 180+66.96 (16.00' Lt.)	"L" Line 64+77.97 (22.00 Lt.)	25 Ft.	48.76'	111°44'55"	36.89'	112.17	111.18	110.44	109.93	109.63
9	"L" Line 65+66.25 (22.00' Rt.)	"38" Line 180+34.25 (16.00' Rt.)	25 Ft.	29.78'	68°15'05"	16.94'	111.07	110.86	110.60	110.38	110.42
10	"L" Line 66+56.98 (22.00' Lt.)	"Bc" Line 195+82.41 (11.00 Lt.)	25 Ft.	38.90'	89°09'10"	24.63'	112.55	112.60	112.37	111.80	110.82
11	"Bc" Line 195+80.61 (11.00' Lt.)	"37" Line 67+28.29 (22.00 Rt.)	25 Ft.	39.64'	90°50'50"	25.37'	110.75	111.91	112.79	113.39	113.71

	Curb Ramp ℄ Station and Offset
6	"L" Line 63+68.48 (29.26' Rt.)
7	"L" Line 64+11.13 (29.41' Rt.)
8	"L" Line 64+98.64 (32.94' Lt.)
9	"L" Line 65+46.77 (31.33' Lt.)
10	"L" Line 66+73.83 (29.20' Rt.)
11	"L" Line 67+10.48 (29.45' Rt.)

NOTE:
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Dogwood City of the West

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SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

ROADWAY DETAILS

SHEET NO. 2B-2

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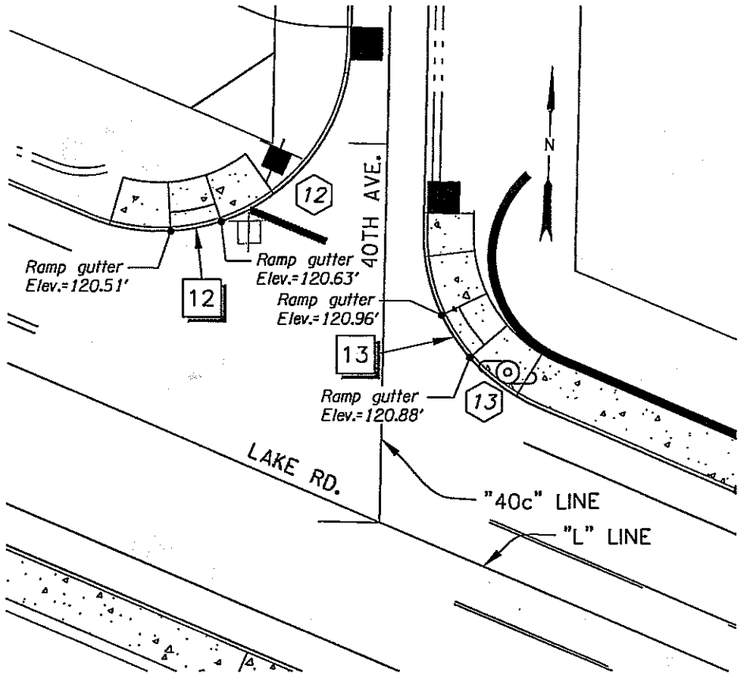

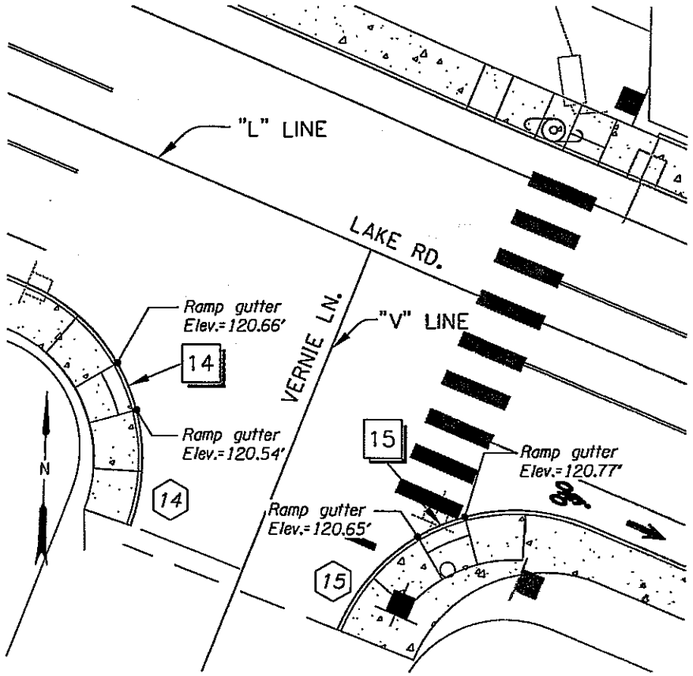

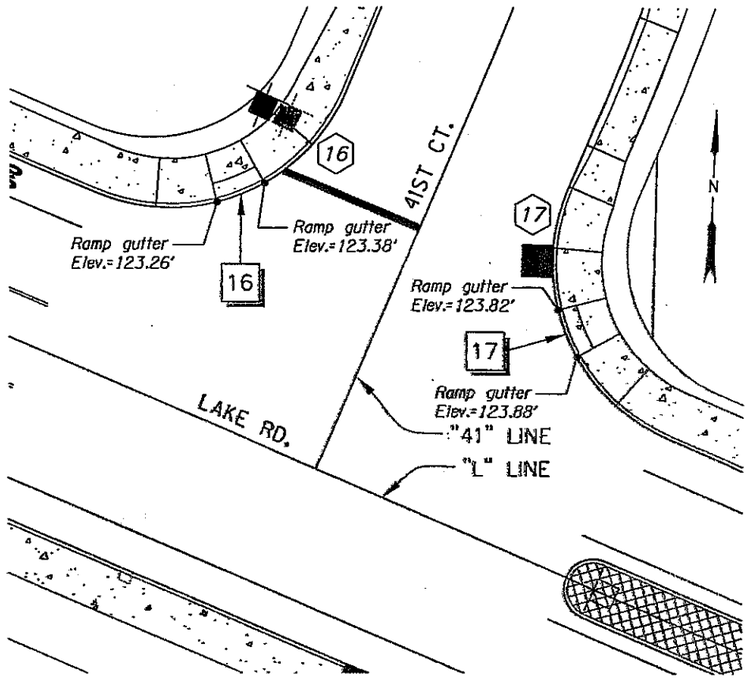

	PC Station at Beginning Δ	PT Station at Ending Δ	Radius	Length	Delta	Tangent	Gutter Elevation Begin Δ	1/4 Δ	1/2 Δ	3/4 Δ	End Δ
12	"40c" Line 215+62.96 (5.00' Lt.)	"L" Line 72+13.24 (22.00 Lt.)	25 Ft.	48.93'	112°08'59"	37.17'	123.10	121.94	121.11	120.56	120.28
13	"L" Line 72+78.02 (22.00' Lt.)	"40" Line 215+38.53 (5.00 Rt.)	25 Ft.	29.61'	67°51'01"	16.82'	120.88	120.86	120.90	121.05	121.34
14	"L" Line 73+71.72 (22.00' Rt.)	"V" Line 221+74.31 (16.00' Lt.)	25 Ft.	38.09'	87°17'48"	23.85'	121.02	120.94	120.60	120.07	119.40
15	"V" Line 221+71.67 (14.50' Rt.)	"L" Line 74+52.16 (22.00 Rt.)	25 Ft.	39.96'	91°35'11"	25.70'	119.15	119.98	120.71	121.48	121.84
16	"41" Line 230+47.04 (16.00' Lt.)	"L" Line 75+07.95 (22.00 Lt.)	25 Ft.	39.30'	90°03'43"	25.03'	124.09	123.61	123.32	123.14	122.99
17	"L" Line 75+89.95 (22.00' Lt.)	"41" Line 230+46.96 (16.00 Rt.)	25 Ft.	39.24'	89°56'16"	24.97'	124.16	123.95	123.85	123.74	124.09

	Curb Ramp ℄ Station and Offset
12	"L" Line 72+33.08 (33.05' Lt.)
13	"L" Line 72+64.07 (26.26' Lt.)
14	"L" Line 73+89.16 (29.08' Rt.)
15	"L" Line 74+31.48 (29.93' Rt.)
16	"L" Line 75+25.64 (29.33' Lt.)
17	"L" Line 75+68.75 33.75' Lt.)

NOTE:
Grade AC Paving within 4ft. of pedestrian ramp as necessary to achieve elevations shown. If no ramp elevations are provided, grade AC paving as necessary to achieve 2% max. crosslope on ramp.

MILWAUKIE
Dogwood City of the West

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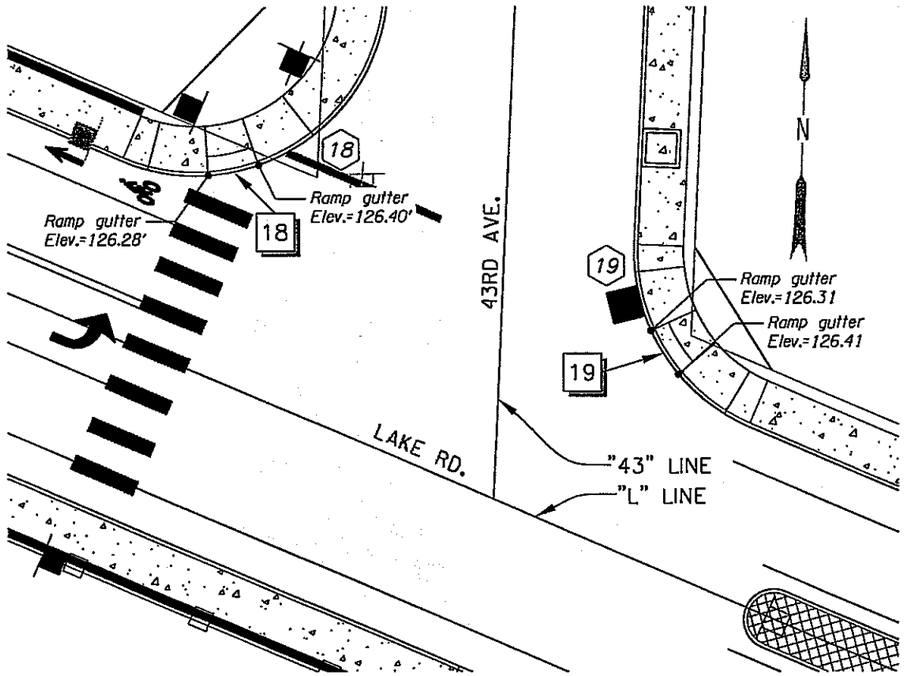
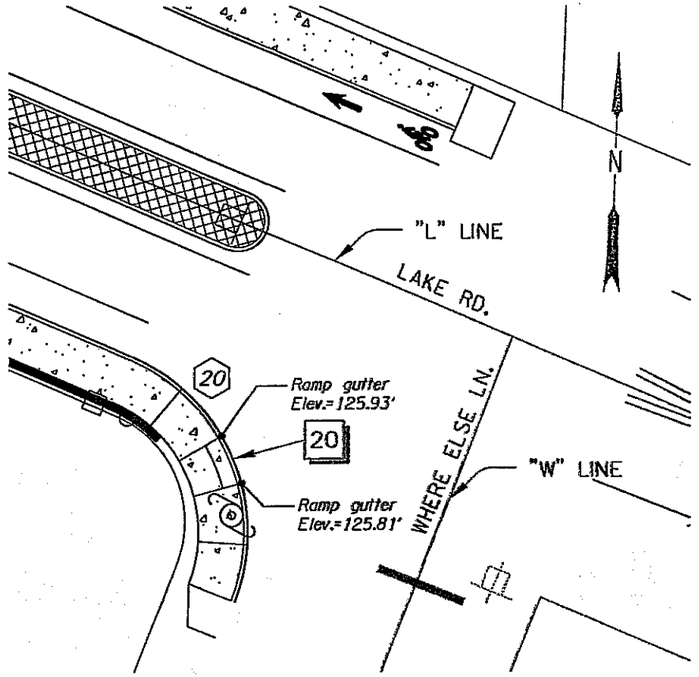
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

ROADWAY DETAILS

SHEET NO. 2B-3





	PC Station at Beginning Δ	PT Station at Ending Δ	Radius	Length	Delta	Tangent	Gutter Elevation Begin Δ	1/4 Δ	1/2 Δ	3/4 Δ	End Δ
18	"43" Line 240+66.06 (17.00' Lt.)	"L" Line 79+76.07 (22.00 Lt.)	25 Ft.	48.28'	110°39'18"	36.14'	127.96	127.08	126.56	126.28	126.17
19	"L" Line 80+65.84 (22.00' Lt.)	"43" Line 240+34.40 (17.00 Rt.)	25 Ft.	30.26'	69°20'42"	17.29'	126.62	126.51	126.35	126.24	126.29
20	"L" Line 81+22.94 (22.00' Rt.)	"W" Line 251+30.68 (21.09' Lt.)	25 Ft.	38.53'	88°18'49"	24.27'	126.71	126.50	125.87	124.94	123.84

	Curb Ramp ℄ Station and Offset
18	"L" Line 79+96.63 (32.78' Lt.)
19	"L" Line 80+42.69 (37.57' Lt.)
20	"L" Line 81+40.36 (29.07' Rt.)

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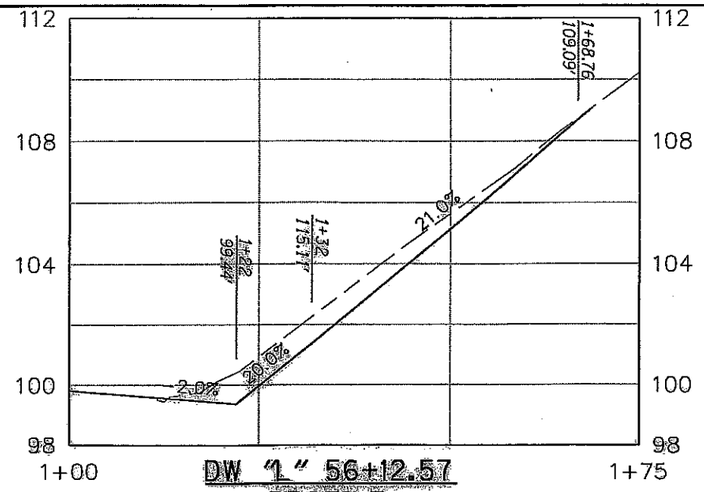
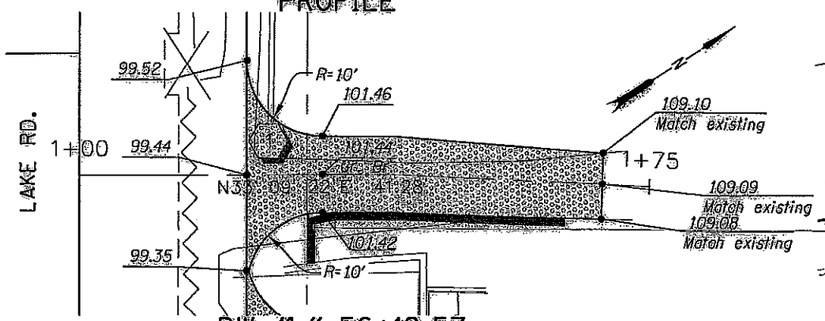
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

ROADWAY DETAILS

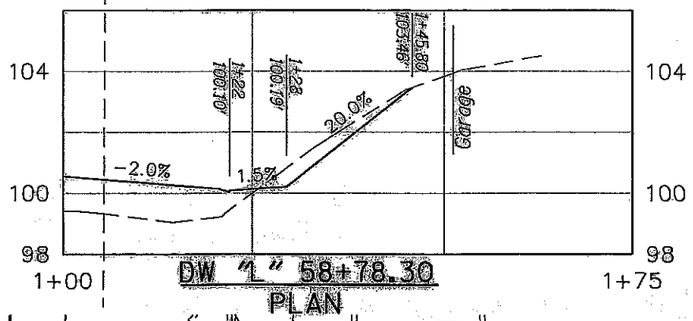
SHEET NO. 2B-4



DW "L" 56+12.57
PROFILE



DW "L" 56+12.57
PLAN



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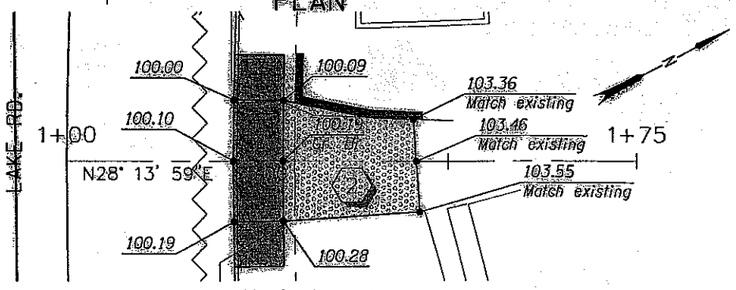

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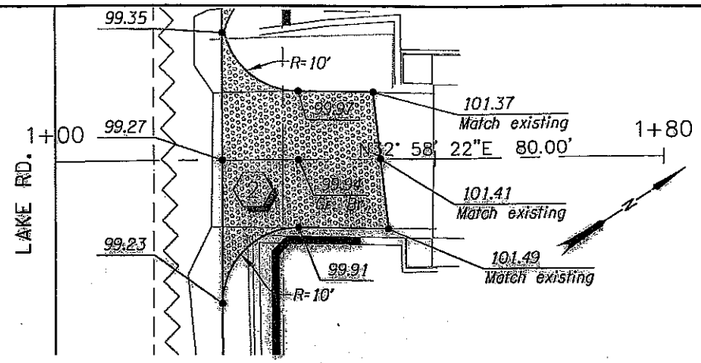

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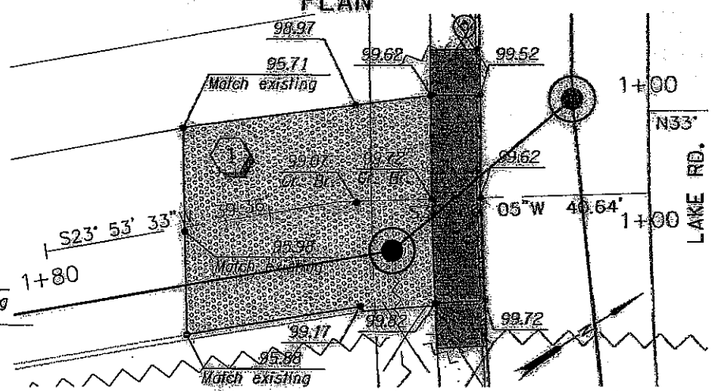
PLAN



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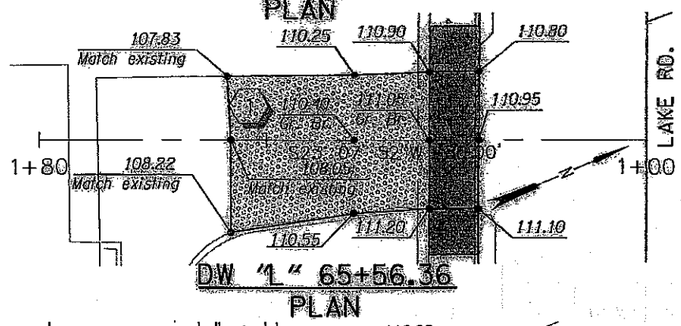
PLAN



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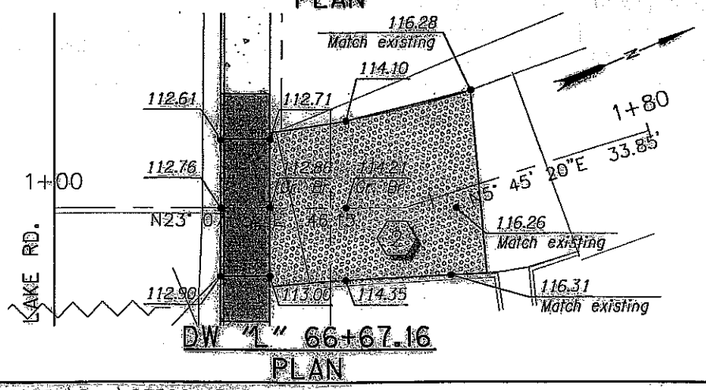

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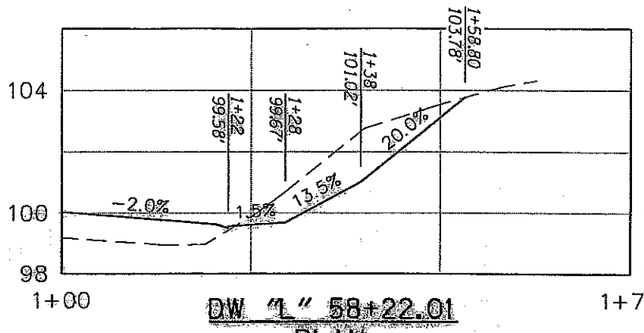

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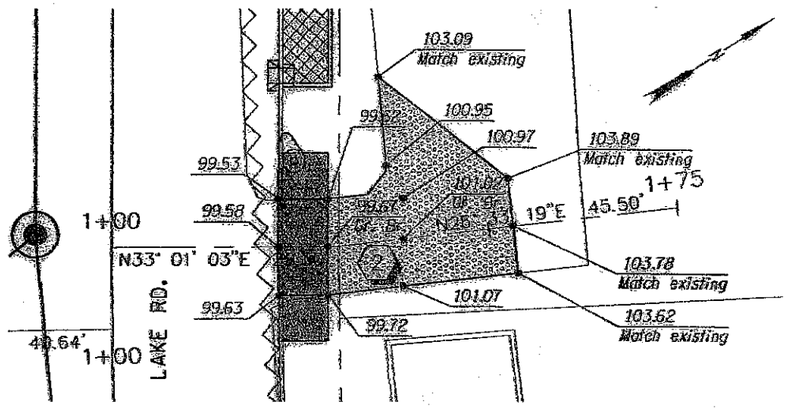
PLAN



DW "L" 58+22.01
PLAN

NOTES:

1. Construct type N driveway approaches with concrete connections to match existing as shown. Notify engineer if field conditions vary from information on plans. (For details, see drg. no. RD750).
2. Plan view scale: 1"=20', Profile view scale: Horiz. 1"=20', Vert. 1"=5'
3. Grades given at curb are top of curb. Use ¾" lip for driveway option N.

GENERAL NOTES:

1. Construct asphalt concrete driveway connection.
2. Construct P.C. concrete driveway connection.

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SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
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Drafted By - Sadie Reiter

DRIVEWAY DETAILS

SHEET NO. 2B-5

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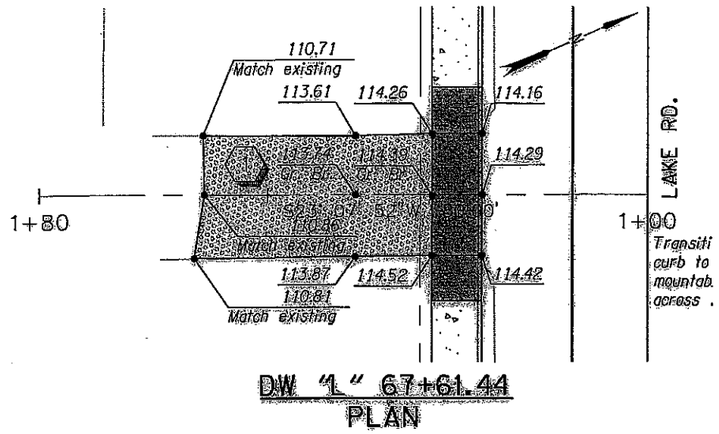

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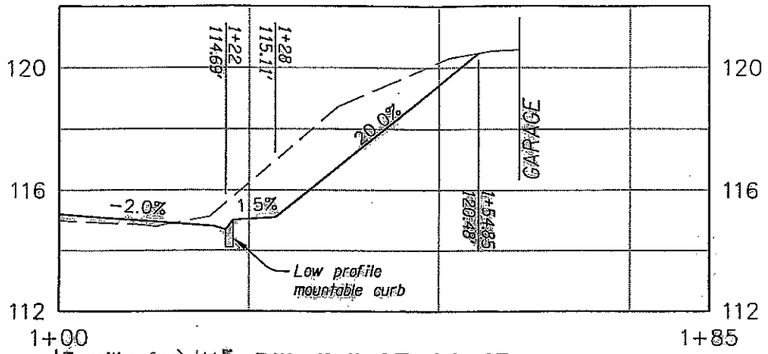
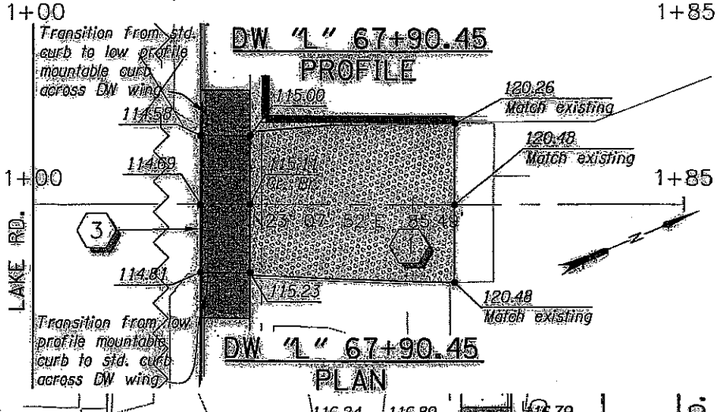
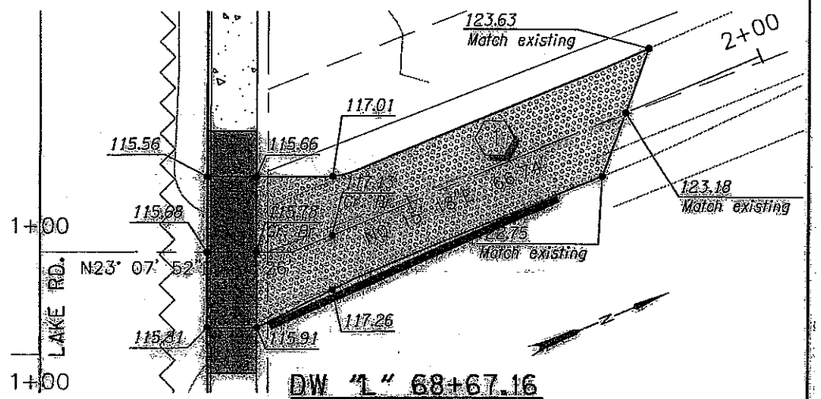




DW "L" 67+90.45
PROFILE

DW "L" 67+90.45
PLAN



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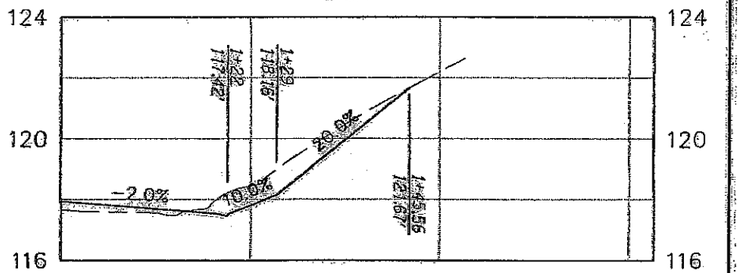

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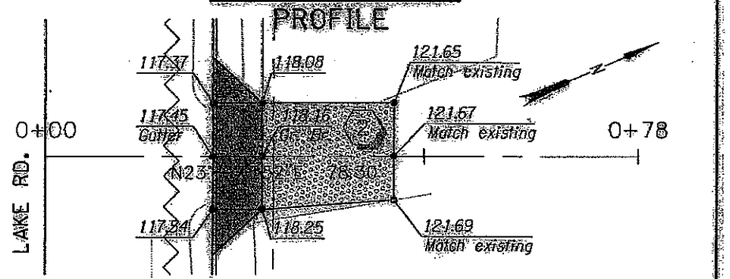
PROFILE



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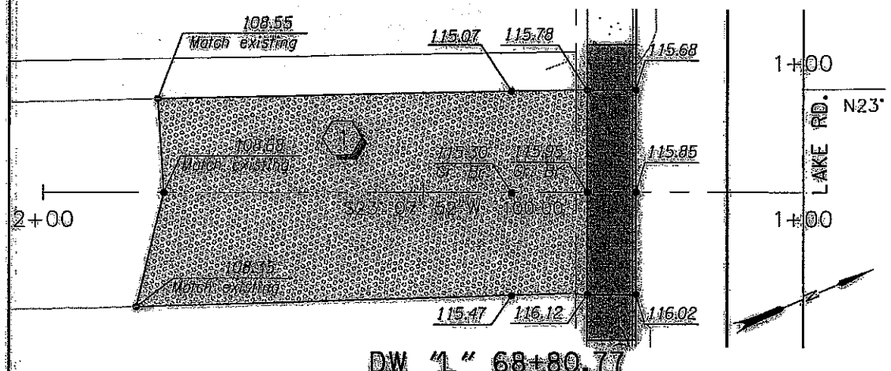

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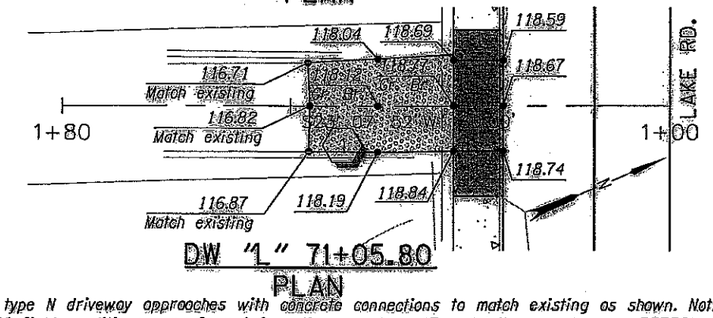
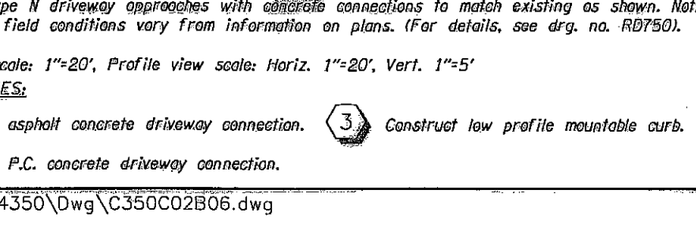
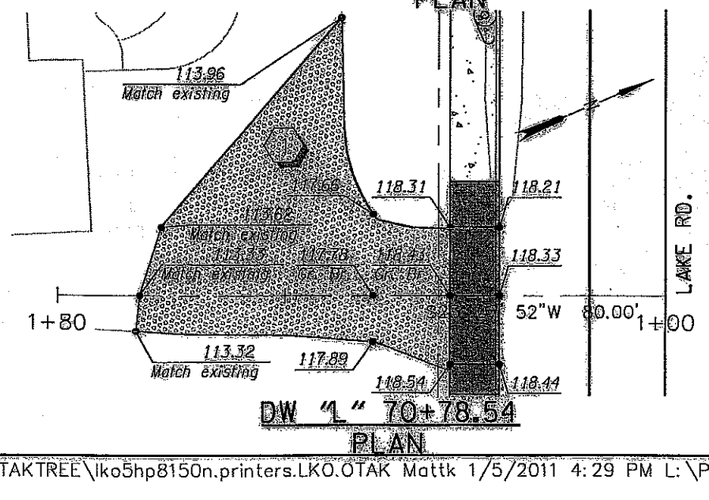


DW "L" 69+61.65
PLAN



DW "L" 71+05.80
PLAN



DW "L" 70+78.54
PLAN

NOTES:

1. Construct type N driveway approaches with concrete connections to match existing as shown. Notify engineer if field conditions vary from information on plans. (For details, see drg. no. RD750).
2. Plan view scale: 1"=20', Profile view scale: Horiz. 1"=20', Vert. 1"=5'

GENERAL NOTES:

(1) Construct asphalt concrete driveway connection.
(2) Construct P.C. concrete driveway connection.
(3) Construct low profile mountable curb.

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

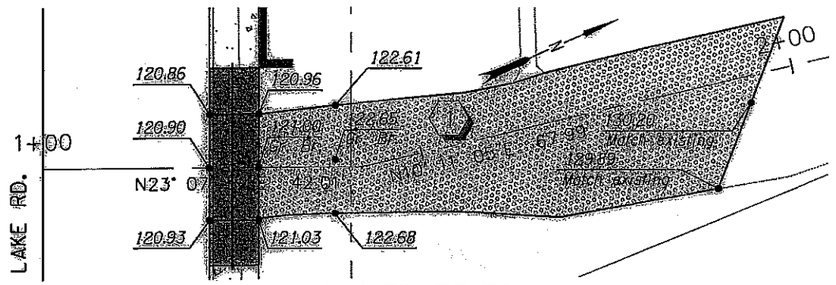
Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

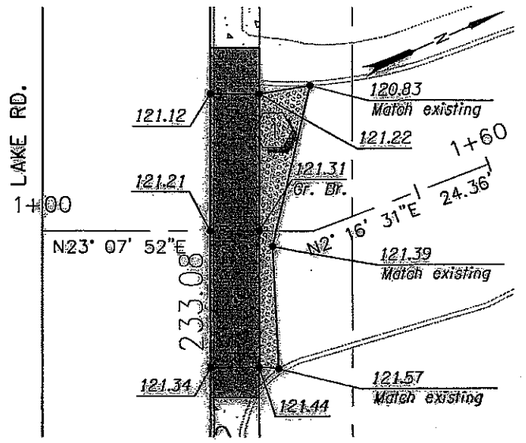
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRIVEWAY DETAILS

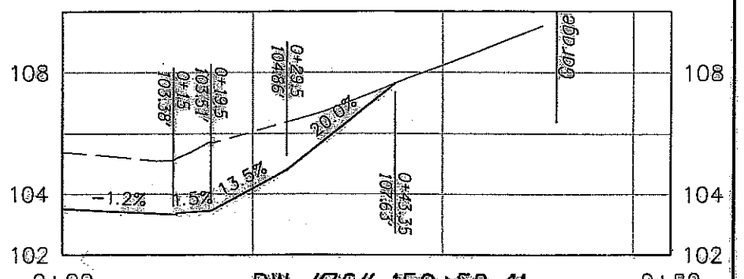
SHEET NO. 2B-6



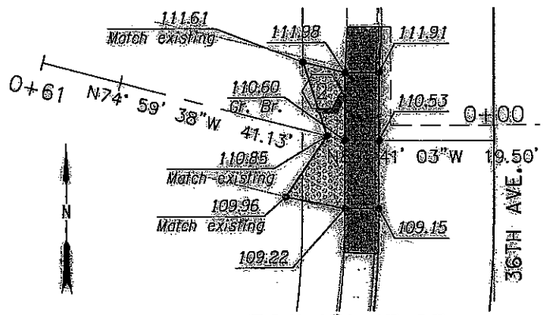
DW "L" 73+35.79
PLAN



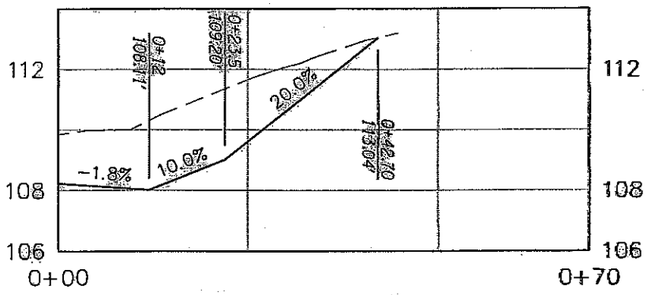
DW "L" 73+97.60
PLAN



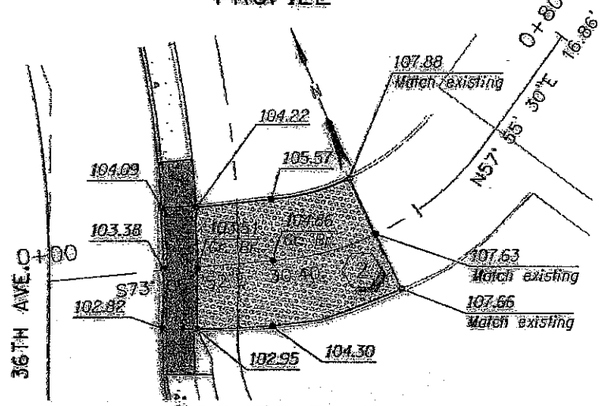
DW "36" 150+58.41
PROFILE



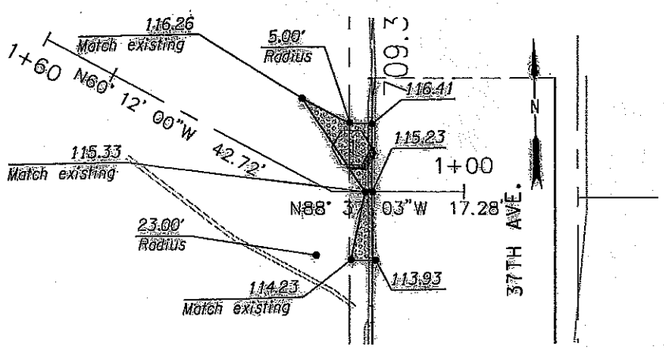
DW "36" 151+15.95
PLAN



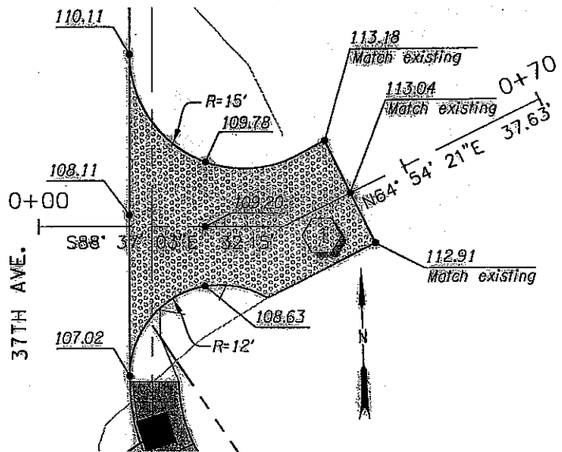
DW "37" 160+57.79
PROFILE



DW "36" 150+58.41
PLAN



DW "37" 161+16.14
PLAN



DW "37" 160+57.79
PLAN

NOTES:

1. Construct type N driveway approaches with concrete connections to match existing as shown. Notify engineer if field conditions vary from information on plans. (For details, see drg. no. RD750).
2. Plan view scale: 1"=20', Profile view scale: Horiz. 1"=20', Vert. 1"=2'

GENERAL NOTES:

1. Construct asphalt concrete driveway connection.
2. Construct P.C. concrete driveway connection.

MILWAUKIE
Dogwood City of the West

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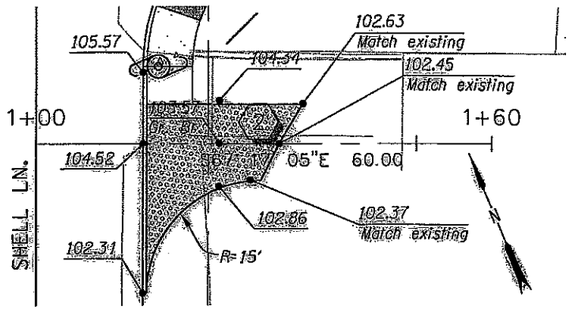
SE LAKE ROAD
CLACKAMAS COUNTY

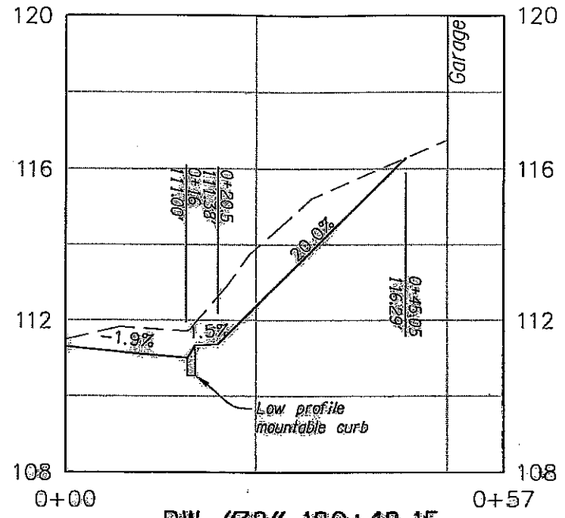
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRIVEWAY DETAILS

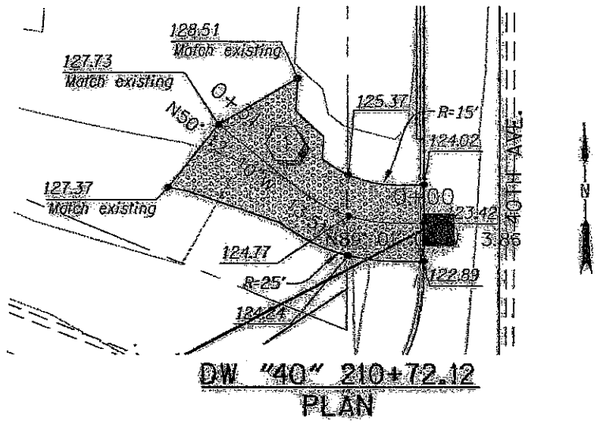
SHEET NO. 2B-7



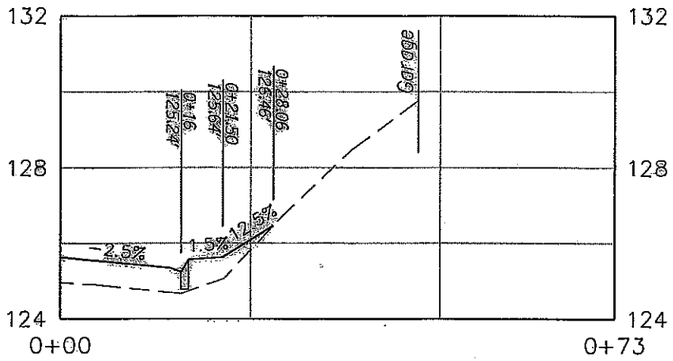
DW "S" 171+24.33
PLAN



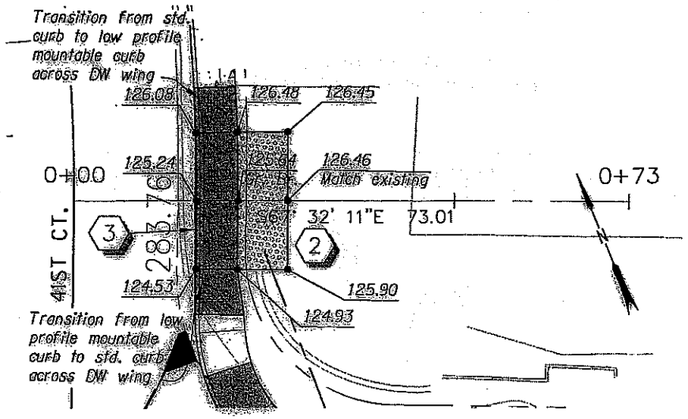
DW "38" 180+48.15
PROFILE



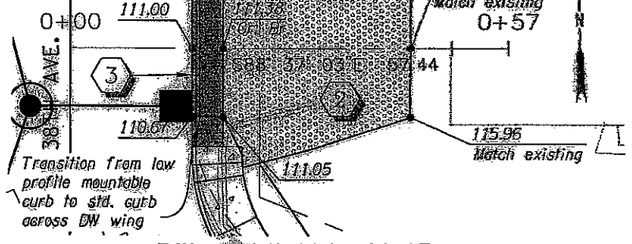
DW "40" 210+72.12
PLAN



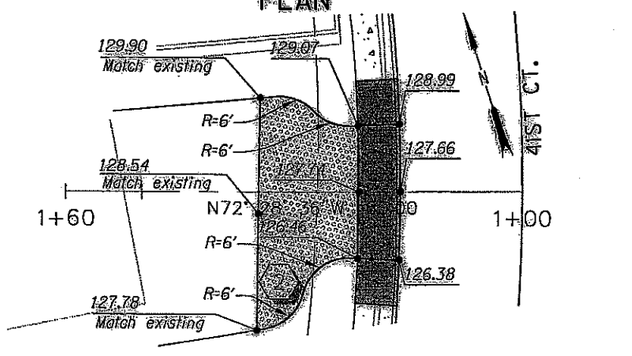
DW "41" 230+62.12
PROFILE



DW "41" 230+62.12
PLAN



DW "38" 180+48.15
PLAN



DW "41" 230+83.76
PLAN

NOTES:

1. Construct type N driveway approaches with concrete connections to match existing as shown. Notify engineer if field conditions vary from information on plans. (For details, see drg. no. RD750).

2. Plan view scale: 1"=20', Profile view scale: Horiz. 1"=20', Vert. 1"=2'

GENERAL NOTES:

1. Construct asphalt concrete driveway connection.
2. Construct P.C. concrete driveway connection.
3. Construct mountable curb.

MILWAUKIE
Dogwood City of the West

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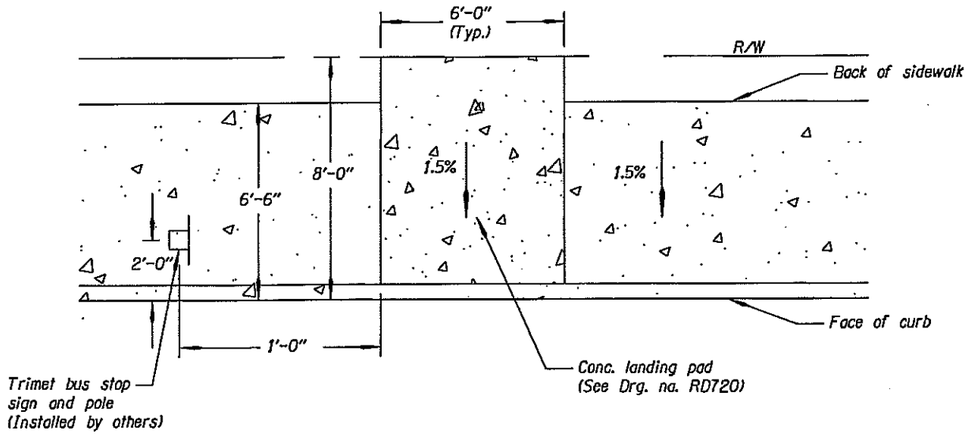
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

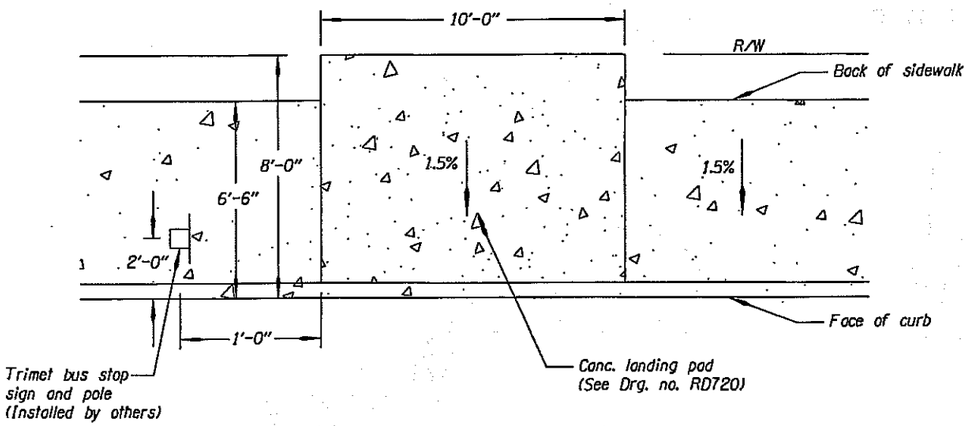
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRIVEWAY DETAILS

SHEET No. 2B-8



TRIMET BUS STOP DETAIL "A"
6'X8' ADA LANDING PAD
SCALE: 1"=5'



TRIMET BUS STOP DETAIL "B"
10'X8' ADA LANDING PAD
SCALE: 1"=5'

Trimet Landing Pad Locations

Station	Offset	L/R	Detail	Plan Sheet	Stop ID #
"L" Sta. 58+90.31	22.0'	R	A	5	3353
"L" Sta. 59+05.28	22.0'	L	B	5	3354
"L" Sta. 66+41.66	22.0'	R	A	6	3325
"L" Sta. 67+55.07	22.0'	L	A	6	3326
"L" Sta. 74+76.10	22.0'	L	A	8	3355
"L" Sta. 74+91.55	22.0'	R	A	8	13147

Note:
1. All stations and offsets refer to center of bus stop pad at face of curb.
2. Trimet landing pads to be paid for as P.C. conc. Sidewalk.

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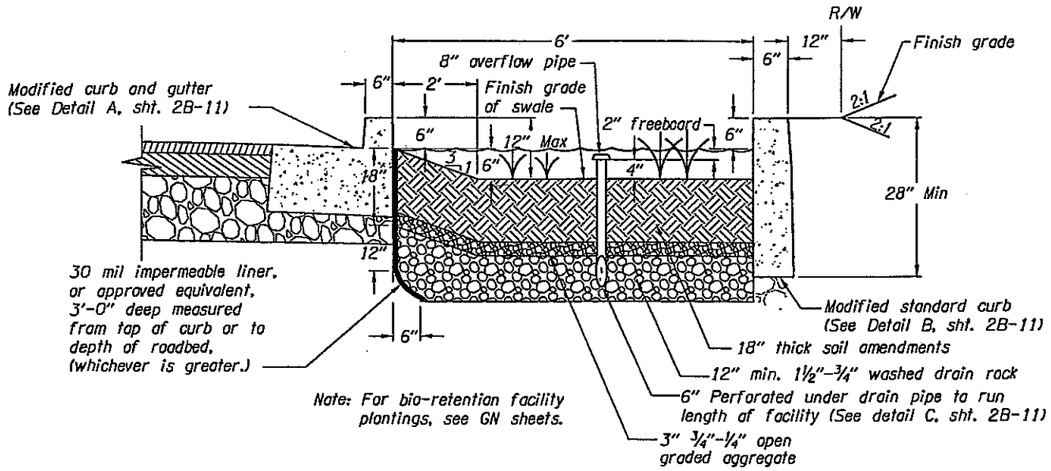
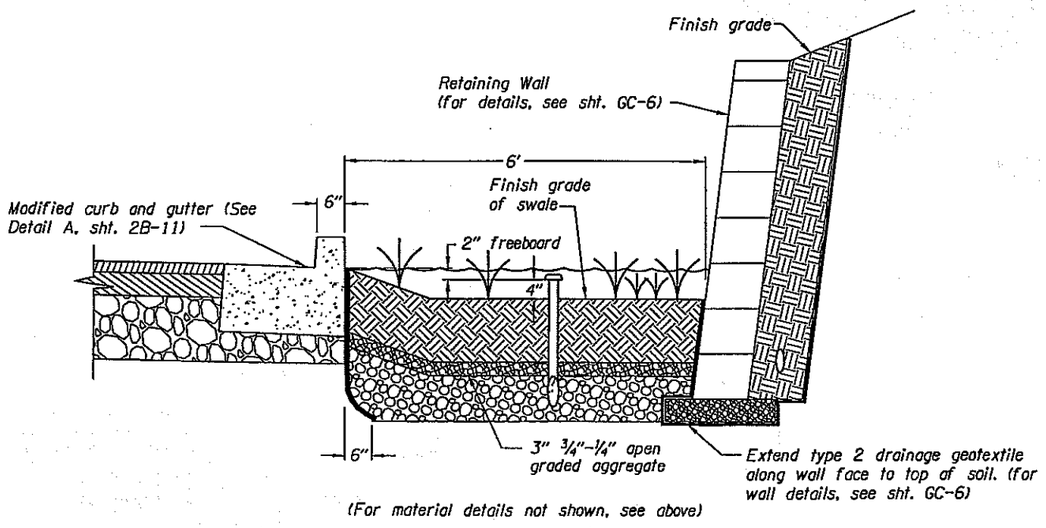
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

SIDEWALK DETAILS

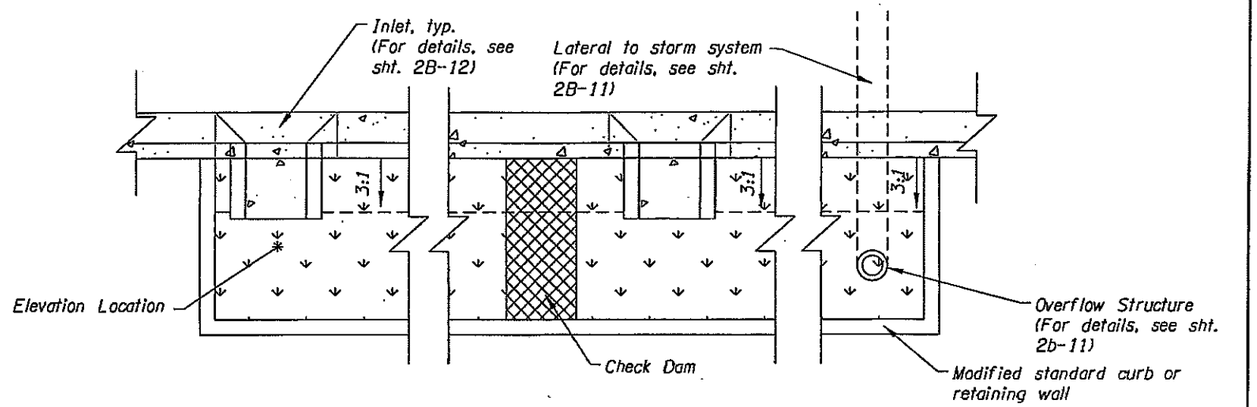
SHEET NO. 2B-9



PARTIAL INFILTRATION BIORETENTION FACILITY
(NON-SIDEWALK LOCATIONS)



PARTIAL INFILTRATION BIORETENTION FACILITY
(AT WALL LOCATIONS)



PARTIAL INFILTRATION BIORETENTION FACILITY DETAIL

Facility	Structure	Station	Elevation* (ft.)
N1	Inlet	"L" 57+11.99	98.95
	Overflow	"L" 57+12.05	98.95
	Inlet	"L" 57+53.44	99.14
	Inlet	"L" 57+75.62	99.25
	Inlet	"L" 57+99.49	99.37

* Elevations are given at top of planter medium.

Facility	Structure	Station	Elevation* (ft.)
N2	Inlet	"L" 60+20.70	102.51
	Overflow	"L" 60+23.24	102.55
	Inlet	"L" 60+57.50	102.80
	Inlet	"L" 60+77.47	103.11
	Inlet	"L" 60+97.44	103.44
	Inlet	"L" 61+17.41	103.76
	Inlet	"L" 61+37.38	104.09
	Inlet	"L" 61+57.35	104.41
	Inlet	"L" 61+77.32	104.74
	Inlet	"L" 61+97.29	105.07
	Inlet	"L" 62+17.26	105.39
	Inlet	"L" 62+37.23	105.90
	Inlet	"L" 62+61.00	106.55
N3	Inlet	"L" 71+28.00	118.91
	Overflow	"L" 71+30.73	118.95
	Inlet	"L" 71+61.16	119.33
	Inlet	"L" 71+84.00	119.63
	Inlet	"L" 71+85.49	119.63

MILWAUKIE
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SE LAKE ROAD
CLACKAMAS COUNTY

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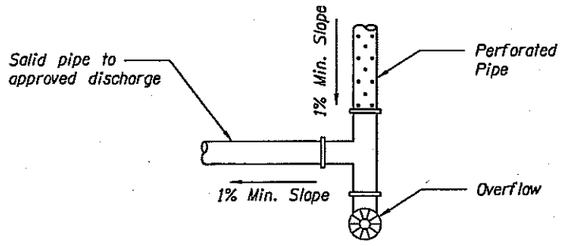
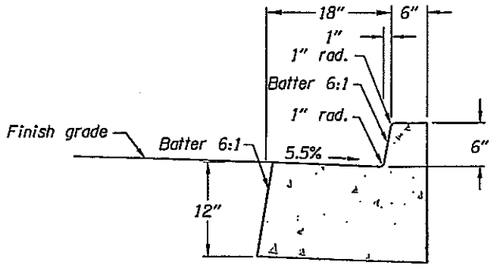
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

BIORETENTION FACILITY DETAILS

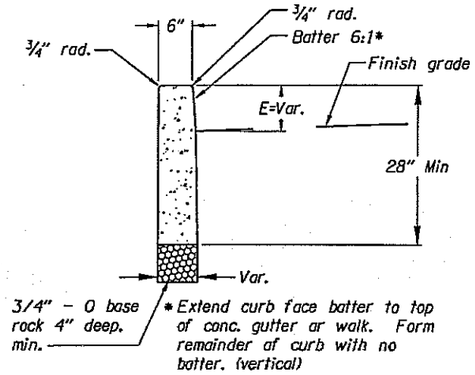
SHEET NO. 2B-10



PLAN



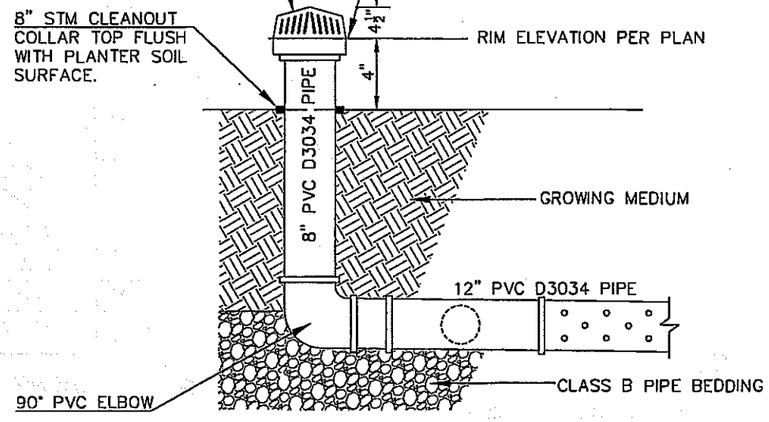
DETAIL A - MODIFIED CURB AND GUTTER
N.T.S.



DETAIL B - MODIFIED STANDARD CURB
N.T.S.

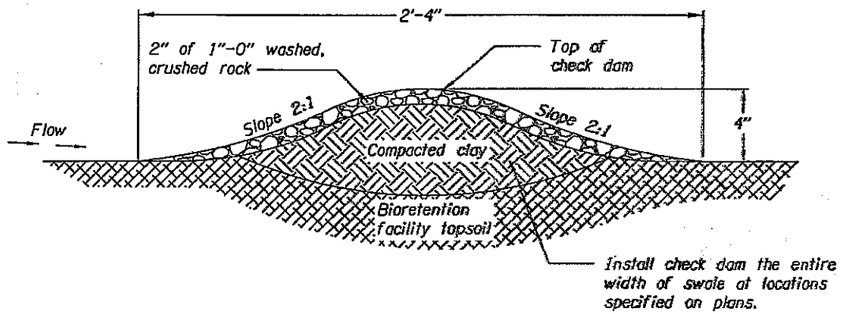
8" GALVANIZED IRON OVERFLOW RISER WITH REMOVABLE SCREENED ASSEMBLY TO ALLOW SERVICE OF CLEANOUT. CONTRACTOR TO SUBMIT DETAILS TO CITY 14 DAYS PRIOR TO CONSTRUCTION.

OVERFLOW FITTING TO BE ZURN Z100 15" DIA. ROOF DRAIN WITH 8" IP THREADED OUTLET, CAST IRON BODY AND POLY DOME. CONNECT GIP TO PVC PIPE WITH FERNCO "STRONG BACK" COUPLING.



SECTION

OVERFLOW STRUCTURE
N.T.S.



CHECK DAM
N.T.S.

Notes:

1. *Check Dams to be evenly space between inlet ond outlet. Additionol requirements may be necessary on steep slopes.*
2. *Additional inlets to be placed directly downstream of check dams.*
3. *Top of Check Dam to be 1" below gutter elevotion at inlet (at curb line) but not greater than 2" below top of curb.*

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SE LAKE ROAD
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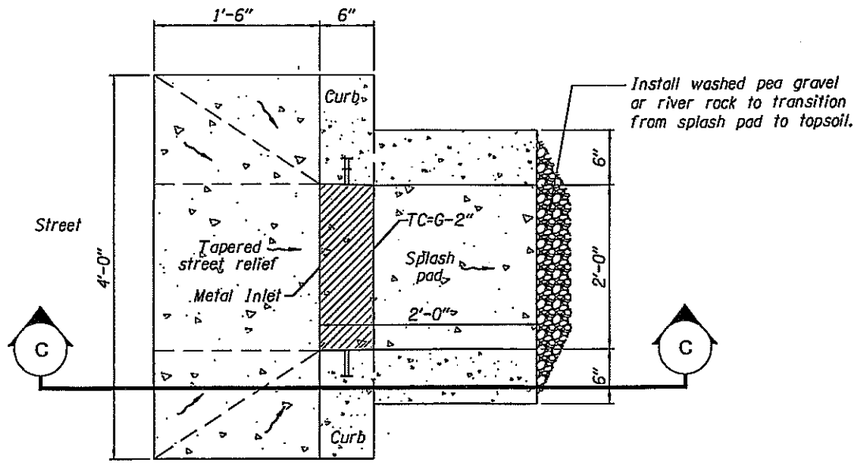
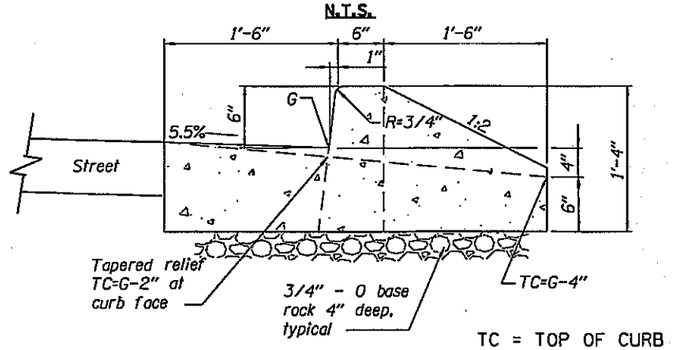
Designed By - Sarah Espinasa, PE
Drafted By - Sadie Reiter

BIORETENTION FACILITY DETAILS

SHEET NO. 2B-11



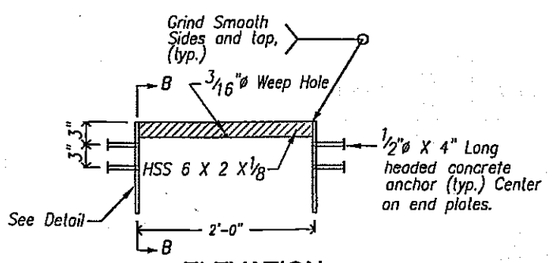
CURB OPENING DETAIL
N.T.S.



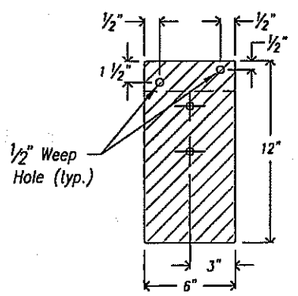
TC = TOP OF CURB
G = GUTTER

SECTION C-C
N.T.S.

METAL INLET ASSEMBLY



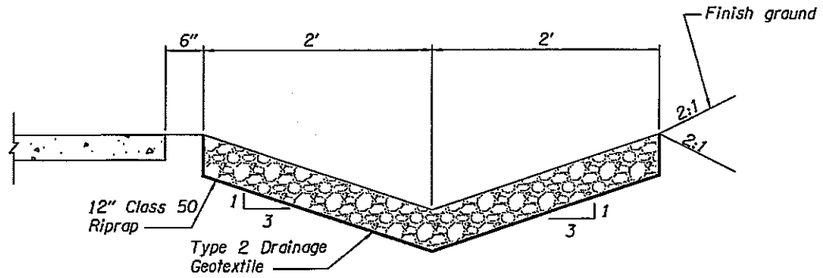
ELEVATION



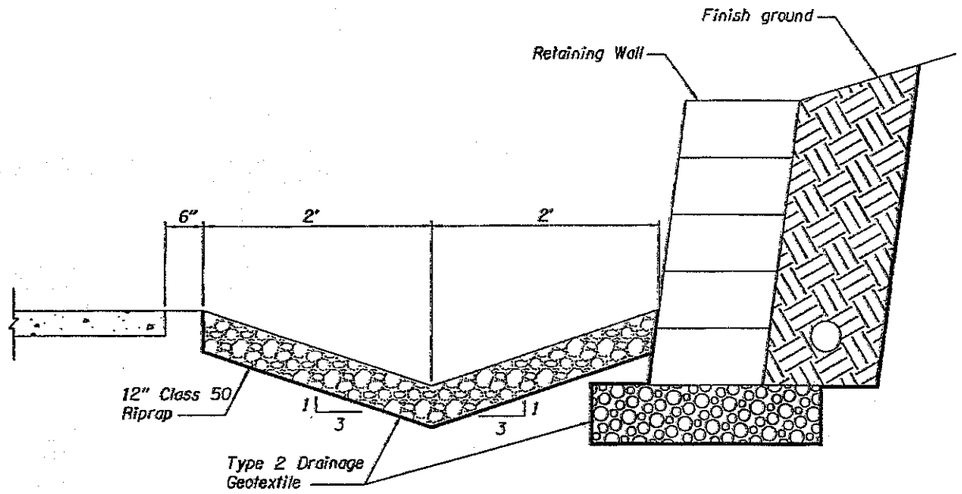
SECTION B-B
END PLATE DETAIL

Notes:

1. *Headed concrete anchors shall meet the requirements of ASTM A-108.*
2. *HSS 6x2x1/8 shall meet the requirements of ASTM A-500 Grade B.*
3. *End Plates shall meet the requirements of ASTM A-36.*
4. *Entire assembly shall be Hot-Dip Galvanized in accordance with ASTM A-123.*
5. *Design vertical wheel load is 8.5kips (1/2 of tandem axle weight specified in FHWA-HOP-06-105).*
6. *Single Bevel Groove Weld.*



ROCK LINED DITCH
N.T.S.



ROCK LINED DITCH
(AT WALL LOCATIONS)
N.T.S.

MILWAUKIE
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CLACKAMAS COUNTY

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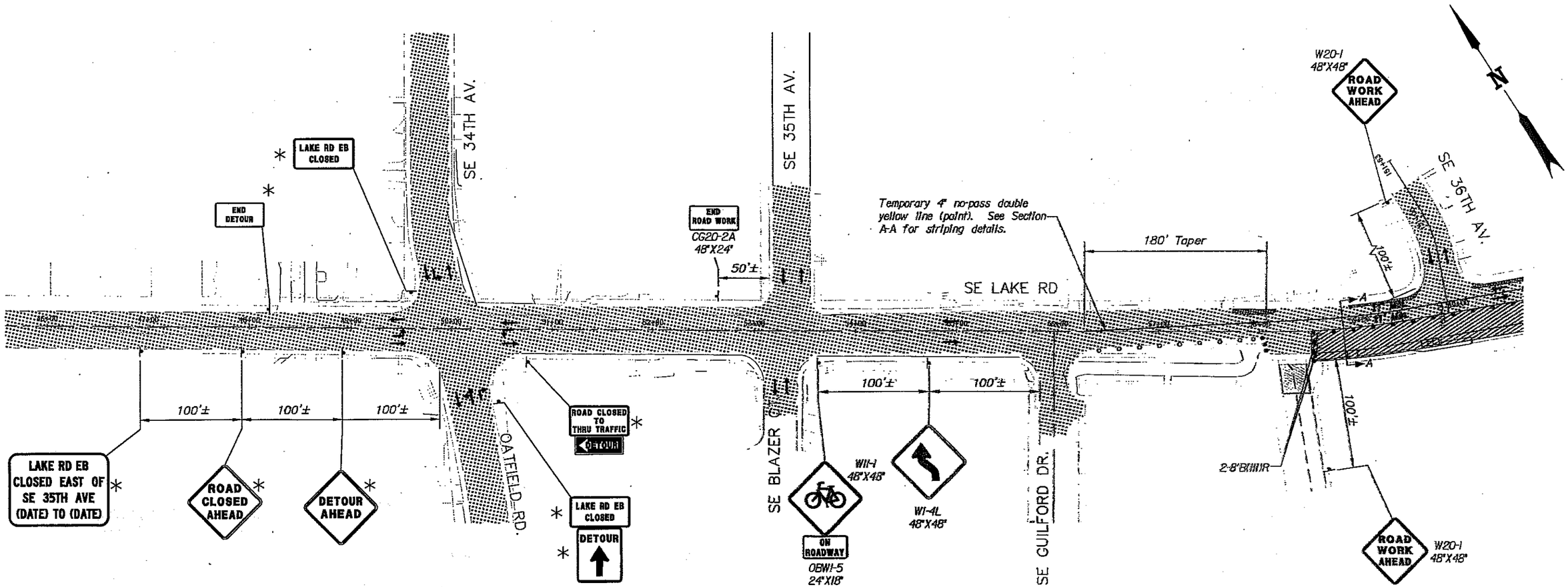
Drafted By - Sadie Reiter

BIORETENTION SWALE / DRAINAGE DETAILS

SHEET NO. 2B-12

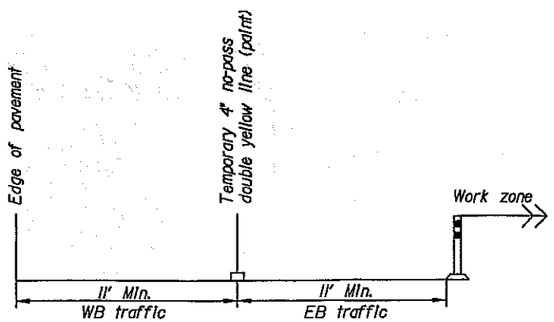
STAGE 1, PHASE A
SE LAKE ROAD

44V-048



GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.
7. Use ODOT Standard drawings TM841 and TM851 to construct median islands.
8. Maintain 22 feet minimum roadway width on SE Lake Road at all times. Where available roadway width is less than 22 feet, install one 3" lift of temporary pavement prior to Stage 1, Phase A.



SECTION A-A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

LEGEND

- Under traffic
- Under construction
- Temporary pavement to be constructed prior to Stage 1 phase A. See general note *8 for details
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- Temporary plastic drums (See TCD Spacing Table on TM800 for max. spacing).
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic
- * See sheet 2C.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates
TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Telephone: (503) 243-3500
Portland, Oregon 97201-5502 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

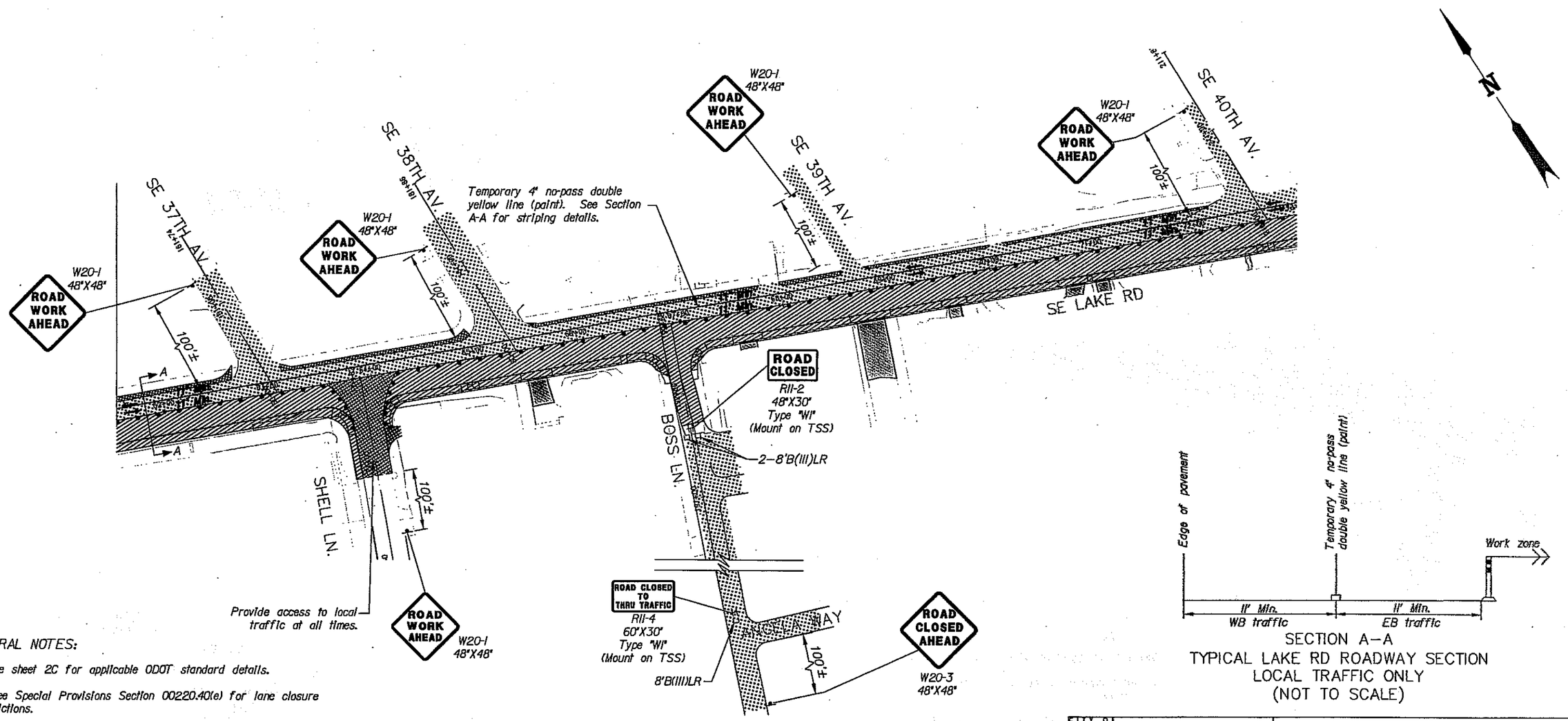
TRAFFIC CONTROL PLAN

SHEET NO. 2C-2

Jan 05, 2011 - 4:20pm
X:\Projects\2008\PB8031-002 (Milwaukie Lake Rd Improvements)\vtc\01\08031_TP02.dwg (Layout1 tab)

STAGE 1, PHASE A
SE LAKE ROAD

44V-048



SECTION A-A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.
7. Use ODOT Standard drawings TM841 and TM851 to construct median islands.
8. Maintain 22 feet minimum roadway width on SE Lake Road at all times. Where available roadway width is less than 22 feet, install one 3" lift of temporary pavement prior to Stage 1, Phase A.

LEGEND

- Under traffic
- Under construction
- Construction under traffic
- Temporary pavement to be constructed prior to Stage 1 phase A. See general note #8 for details
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

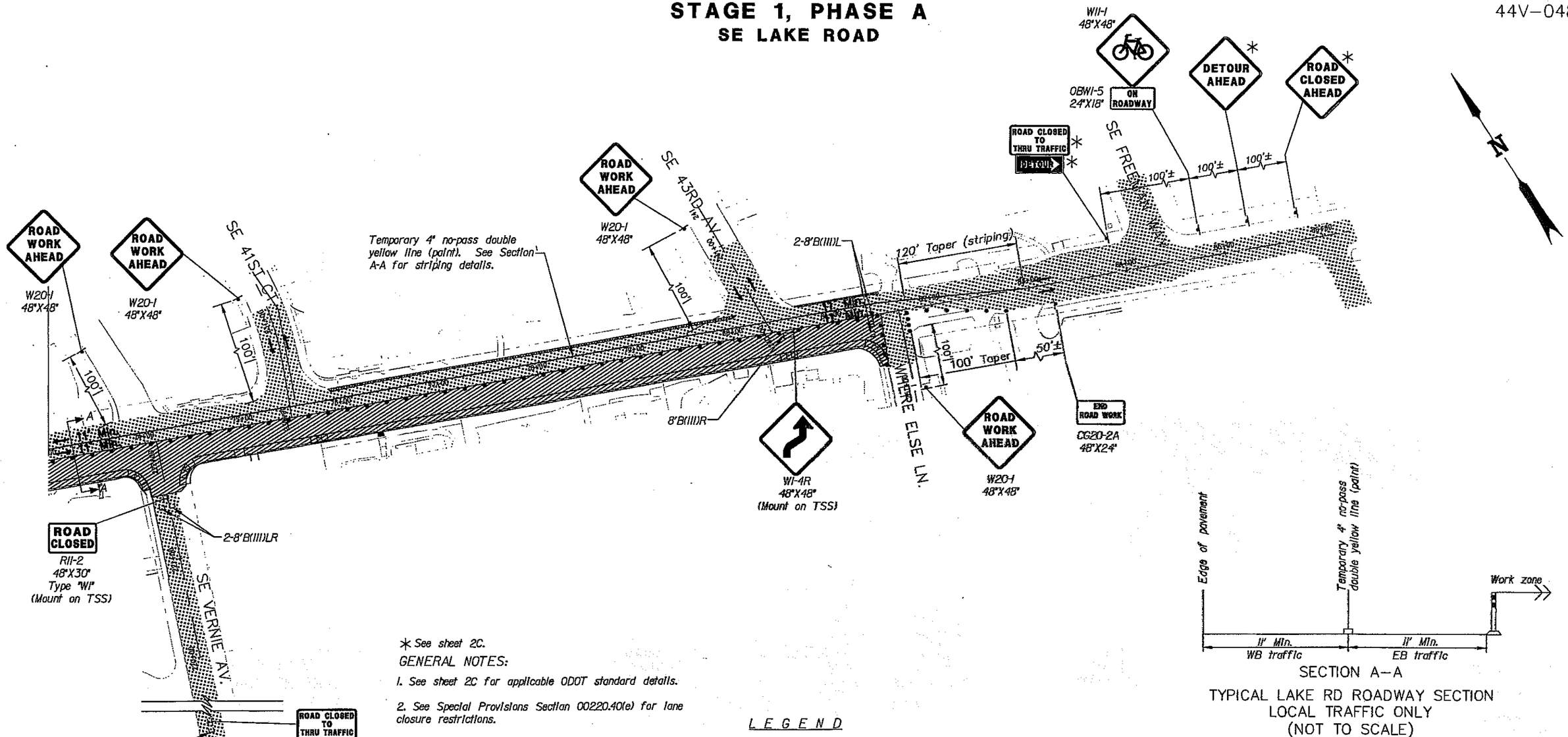
TRAFFIC CONTROL PLAN

SHEET NO. 2C-3

Jan 05, 2011 - 4:30pm
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_TP03.dwg (Layout1 tab)

STAGE 1, PHASE A
SE LAKE ROAD

44V-048



SECTION A–A

TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

* See sheet 2C.

GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.
7. Use ODOT Standard drawings TM841 and TM851 to construct median islands.
8. Maintain 22 feet minimum roadway width on SE Lake Road at all times. Where available roadway width is less than 22 feet, install one 3" lift of temporary pavement prior to Stage 1, Phase A.

LEGEND

- Under traffic
- Under construction
- Temporary pavement to be constructed prior to Stage 1 phase A. See general note *8 for details
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- Temporary plastic drums (See TCD Spacing Table on TM800 for max. spacing).
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

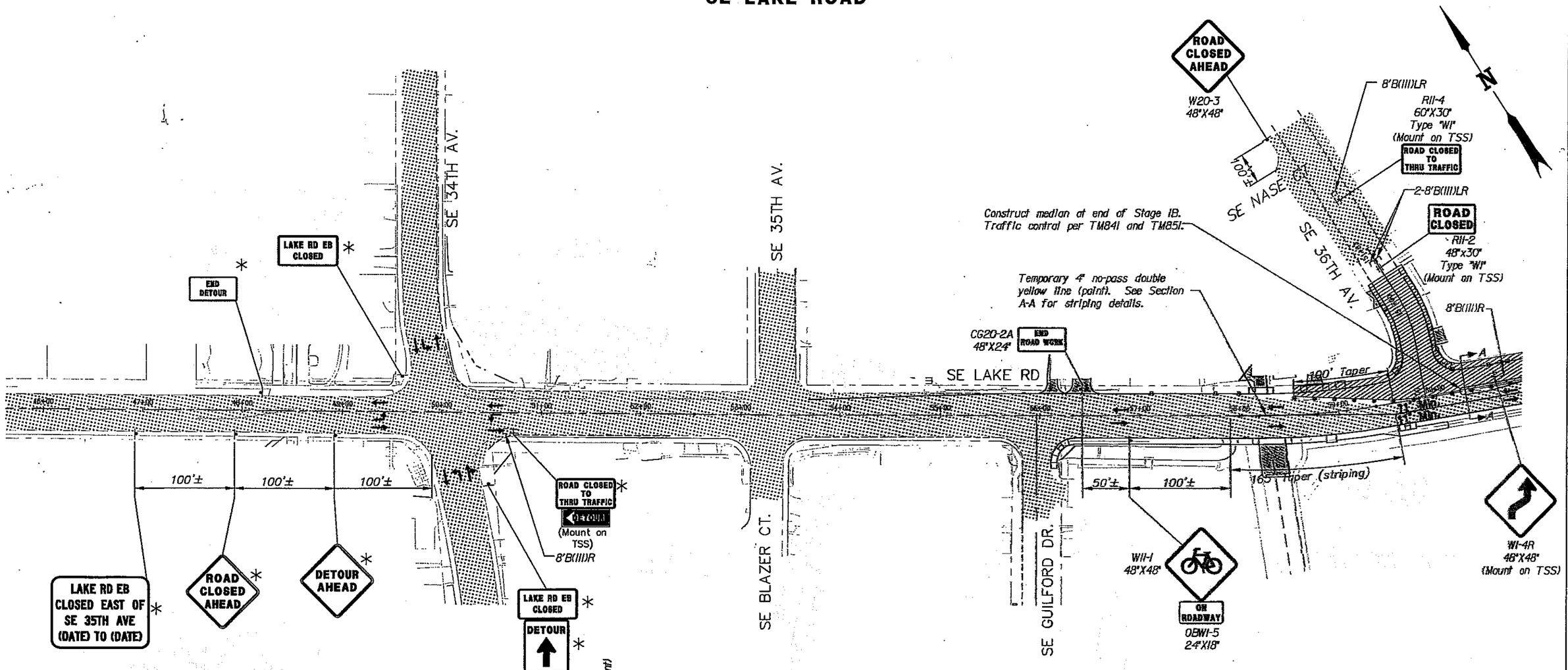
TRAFFIC CONTROL PLAN

SHEET NO. 2C–4

Jan 05, 2011 – 4:21pm
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_TP04.dwg (Layout1 tab)

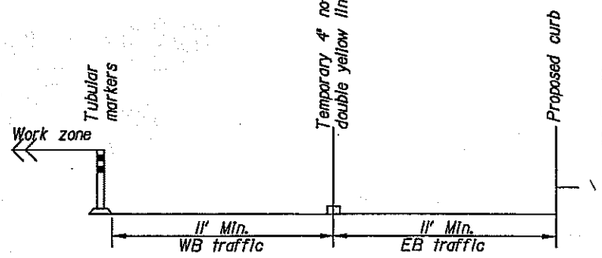
STAGE 1, PHASE B
SE LAKE ROAD

44V–048



GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.



SECTION A–A

TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

* See sheet 2C.

LEGEND

- Under traffic
- Under construction
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH

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OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates TRANSPORTATION SOLUTIONS 1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502 Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

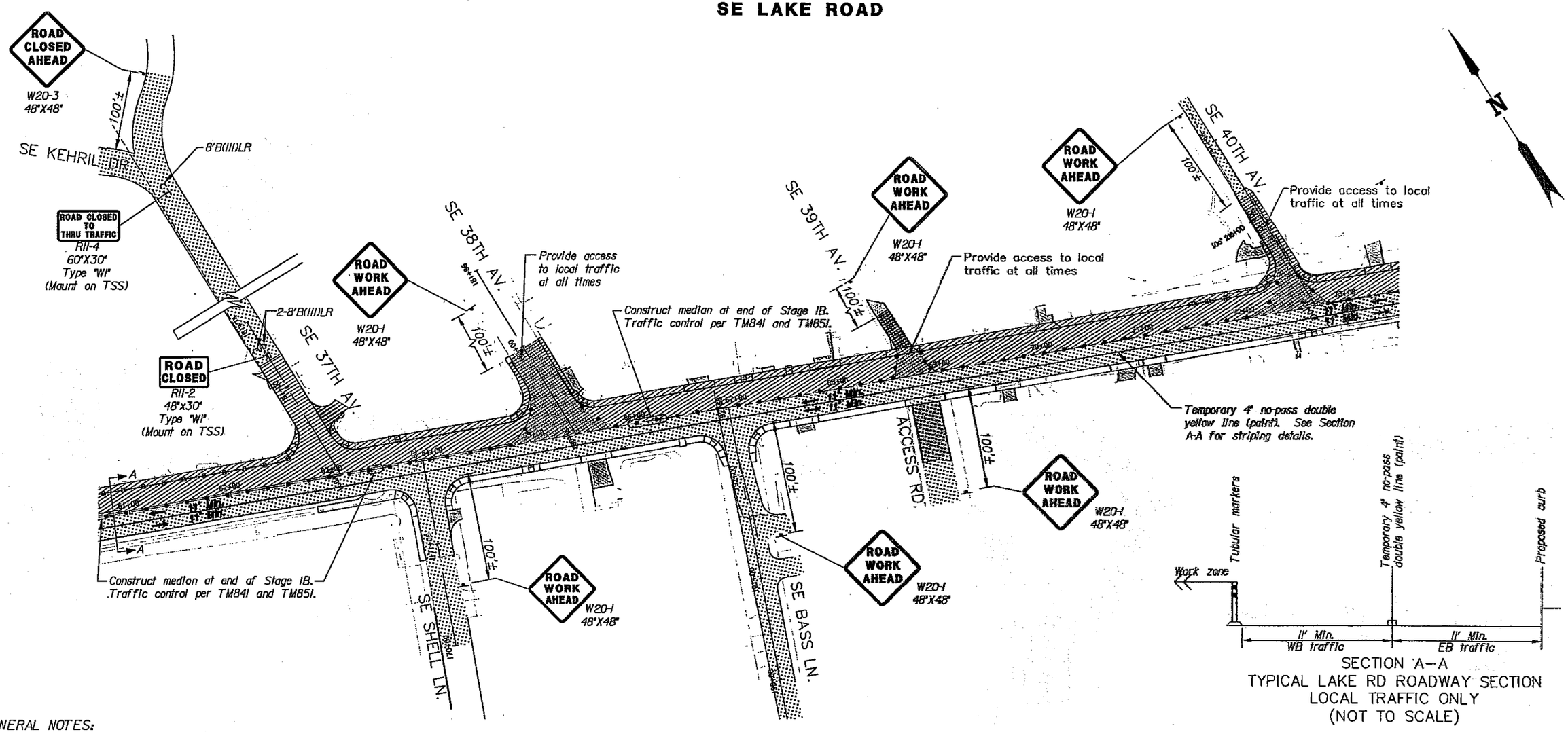
TRAFFIC CONTROL PLAN

SHEET NO. 2C–5

Jan 05, 2011 – 4:21pm
X:\Projects\2008\PROJ31-002 (Milwaukie Lake Rd Improvements)\ACAD\TM31_TP05.dwg (Layout1 tab)

STAGE 1, PHASE B
SE LAKE ROAD

44V-048



SECTION A–A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.

LEGEND

- Under traffic
- Under construction
- Construction under traffic
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

DKS Associates
TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500
Portland, Oregon 97201-5502
Telephone: (503) 243-3500
Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

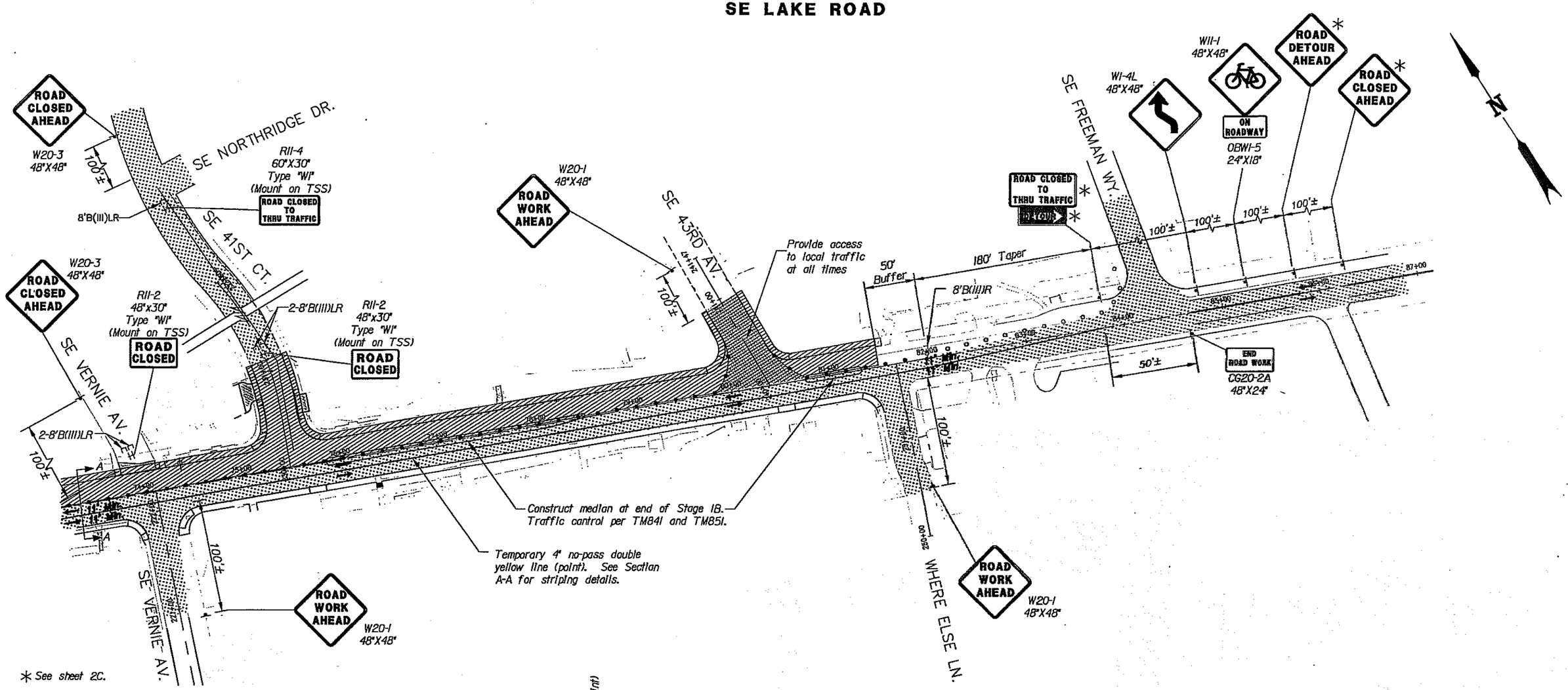
TRAFFIC CONTROL PLAN

SHEET NO. 2C–6

Jan 05, 2011 – 4:21pm
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\[08031_TP06.dwg (Layout1 tab)

STAGE 1, PHASE B
SE LAKE ROAD

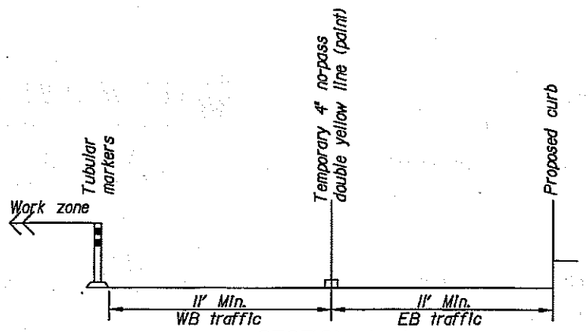
44V-048



* See sheet 2C.

GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road between SE 34th Ave and SE 36th Ave at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.



SECTION A-A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

LEGEND

- Under traffic
- Under construction
- Construction under traffic
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- Temporary plastic drums (See TCD Spacing Table on TM800 for max. spacing).
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

TRAFFIC CONTROL PLAN

SHEET NO. 2C-7

Jan 05, 2011 - 4:21pm
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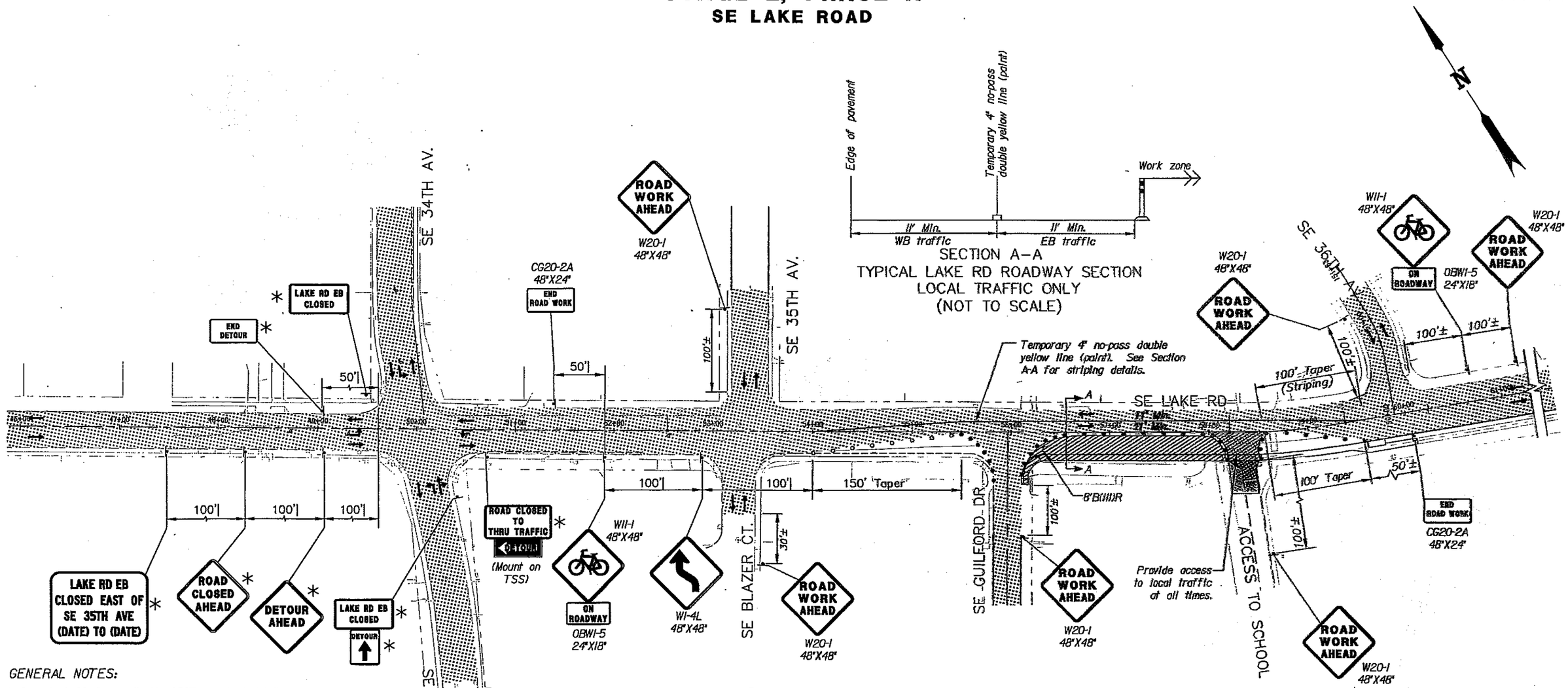
STAGE 2, PHASE A
SE LAKE ROAD

44V-048



GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.
7. 22 feet minimum roadway width on SE Lake Road at all times. If available roadway width is less than 22 feet, install one 3" lift of temporary pavement prior to Stage 2, Phase A.

LEGEND

- Under traffic
- Under construction
- Construction under traffic
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- Temporary plastic drums (See TCD Spacing Table on TM800 for max. spacing).
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic
- * See sheet 2C.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

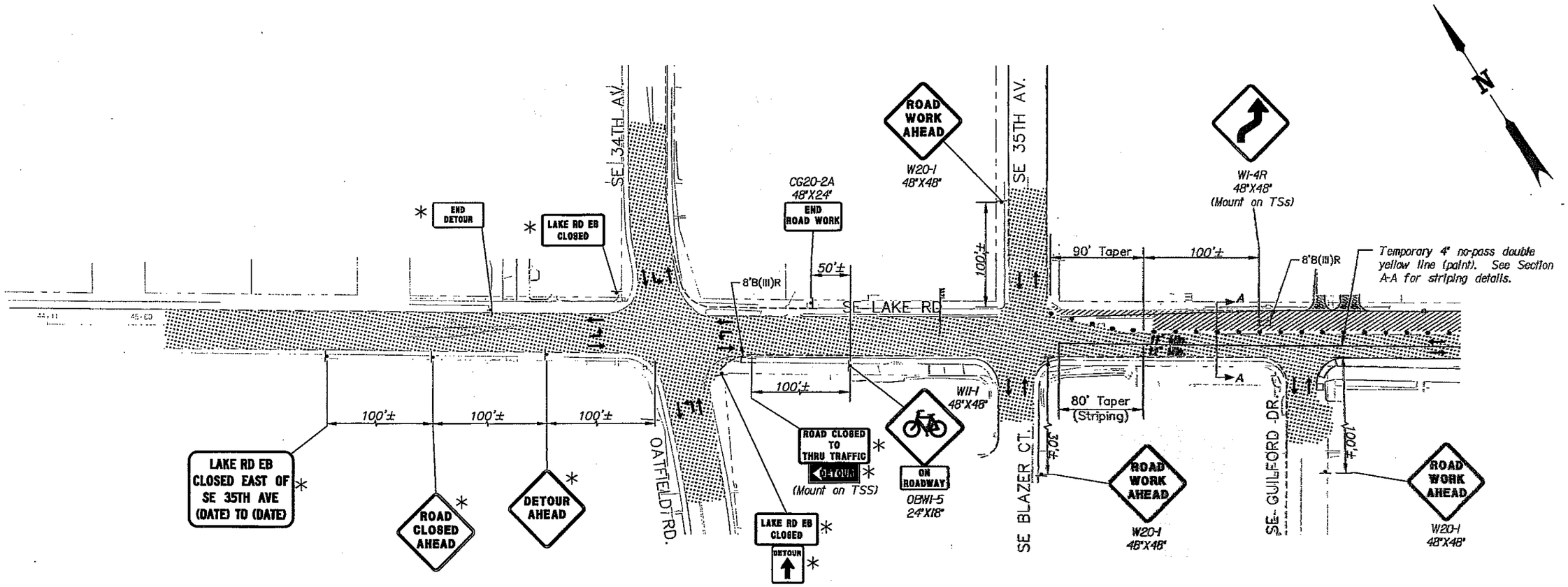
TRAFFIC CONTROL PLAN

SHEET NO. 2C–8

Jan 05, 2011 - 4:22pm
X:\Projects\2008\PD8031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_TP08.dwg (Layout1 tab)

STAGE 2, PHASE B
SE LAKE ROAD

44V-048

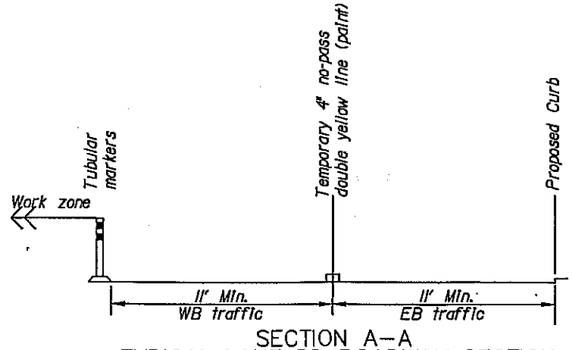


GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road between SE 34th Ave and SE 36th Ave at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.

LEGEND

- Under traffic
- Under construction
- Temporary sign on temporary support
- 8' Type (III) (R, L, or LR) barricade
- Temporary sign on TSS
- • • 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic
- * See sheet 2C.



SECTION A–A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Telephone: (503) 243-3500
Portland, Oregon 97201-5502 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

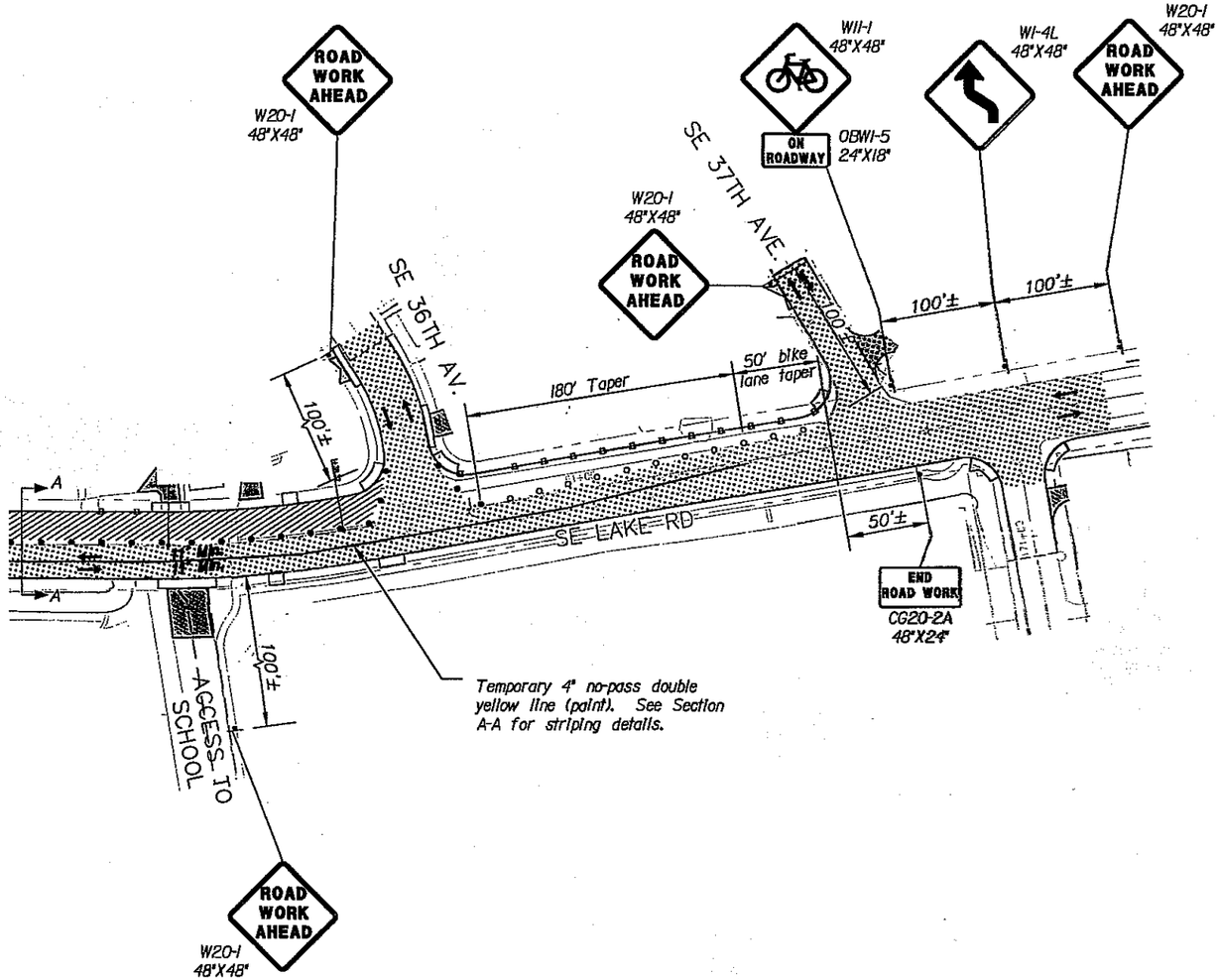
TRAFFIC CONTROL PLAN

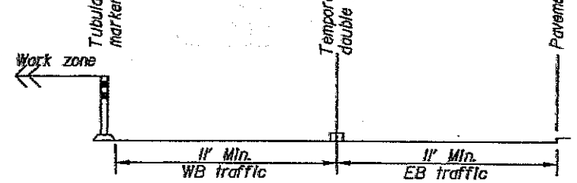
SHEET NO. 2C–9

Jan 05, 2011 - 4:25pm
X:\Projects\2008\08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_TP08.dwg (Layout1 tab)

STAGE 2, PHASE B
SE LAKE ROAD

44V-048





SECTION A–A
TYPICAL LAKE RD ROADWAY SECTION
LOCAL TRAFFIC ONLY
(NOT TO SCALE)

GENERAL NOTES:

1. See sheet 2C for applicable ODOT standard details.
2. See Special Provisions Section 00220.40(e) for lane closure restrictions.
3. See sheet 2C for SE Lake Rd. eastbound and westbound detours.
4. Provide and maintain safe temporary access to all driveways. See Special Provisions.
5. Maintain two-way traffic on Lake Road at all times. Lake Road to be used by local traffic only.
6. Provide and maintain safe pedestrian sidewalks at all times. See Special Provisions for details.

LEGEND

- Under traffic
- Under construction
- Temporary sign on temporary support
- Temporary plastic drums (See TCD Spacing Table on TM800 for max. spacing).
- 28" tubular markers (See TCD Spacing Table on TM800 for max. spacing).
- Direction of traffic

CITY OF MILWAUKIE

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JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

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1400 SW Fifth Avenue, Suite 500 Telephone: (503) 243-3500
Portland, Oregon 97201-5502 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

TRAFFIC CONTROL PLAN

SHEET NO. 2C–10

Jan 05, 2011 – 4:22pm
X:\Projects\13033\13033-002 (Milwaukie Lake Rd improvements)\ACAD\13033_TP10.dwg (Layout1 tab)

PIPE DATA SHEET

SHEET NUMBER	NOTE No. ON PLANS	DESIGN HEIGHT OF COVER ① (FEET)	6	8	10	12	15	18	24	30	36	STORM SEWER	WATERTIGHT JOINTS	PVC	DUCTILE IRON	MANHOLES: DEPTH, TOP OF COVER TO INVERT (Feet)	DIAMETER OF LARGEST PIPE IN BASE (In.)	PRECAST	INLETS: CURB INLET (Number Required)	INLETS: DITCH INLET (Number Required)	REMARKS
3A	2																			1	
	3																		1		
	5	2				12						√	√	√		7.2	15	√			
	5	3				34						√	√	√							
	5	3.5				35						√	√	√							
	6	3.5					110					√	√	√		8.5	18	√			60" Diameter
	6	2						157				√	√	√							
4A																					
	4	0				61						√	√		√	7.1	18	√			60" Diameter
	4	2.5				57						√	√	√							
	4	0				61						√	√		√						
	4	2.5					72					√	√	√							
	7																		1		
	8	2.5				10						√	√	√		6.5	15	√			
	8	2					236					√	√	√				√			
	16	3				51						√	√	√		6.6	15	√			
	16	3					146					√	√	√							
5A																					
	1	3				11						√	√	√		6.2	15	√			
	1	3					96					√	√	√							
	2																		1		
	3	4.5				42						√	√	√		6.5	15	√			
	5	0				33						√	√		√	7.7	18	√			
	5	4						211				√	√	√							
	6																		1		
6A																					
	3	1				32						√	√	√		7.3	18	√			
	3	2.5				12						√	√	√							
	3	4					223					√	√	√							
	4																		1		
	6																		1		
	9	0				36						√	√		√	7.6	15	√			
	9	1.5				12						√	√	√							
	9	4					109					√	√	√							
	15																		1		

(Pipe sizes 6–36 are SIZE IN (Inches), CIRCULAR OR ELLIPTICAL; values are LENGTH IN FEET.)

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

CITY OF MILWAUKIE STANDARD DRAWING NOS.
- ■ 305 Manhole Step G-2
- ■ 600 Catchbasin G-2 Catchbasin
- ■ 603 Flow Through Curb Inlet
- ■ 604 Catchbasin - Sidewalk
- ■ 605 Catchbasin Ditch Inlet
- ■ 606 G-2 Catchbasin Frame
- ■ 607 G-2 Catchbasin Grate
- ■ 611 Sedimentation Manhole
- ■ 615 Manhole Base
- ■ 616 Manhole Riser Details
- ■ 618 Storm Manhole Lid

MILWAUKIE Dogwood City of the West

REGISTERED PROFESSIONAL ENGINEER 51051PE OREGON DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

OREGON DEPARTMENT OF TRANSPORTATION

otak Otak Inc. 17355 SW Boones Ferry Rd. Lake Oswego, Oregon 97035 Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PIPE DATA SHEET — SHEET NO. 2D

44V-048

PIPE / USE / INSTALLATION CRITERIA

SHEET NUMBER	NOTE No. ON PLANS	DESIGN HEIGHT OF COVER ① (FEET)	6	8	10	12	15	18	24	30	36	PIPE - ARCH HELICAL Riveted Welded or Lock Seam EQUIV. AND SIZE (Inches)	LENGTH (Feet)	SPAN (Feet-Inches)	RISE (Feet-Inches)	CORNER RADII (Inches)	DRAIN (PERFORATED)	CULVERT (ROAD APPROACH)	CULVERT (CONDUIT)	CULVERT	IRRIGATION	SIPHON	STORM SEWER	SANITARY SEWER	OTHERS (SEE REMARKS)	WATERTIGHT JOINTS	SLOPE ANCHORS	IMPERFECT TRENCH	PH	RESISTIVITY (HUNDREDS)
7A	2	6.0				54																	√			√				
7A	2	8					43																√			√				
7A	3	2.5				36																	√			√				
7A	4																													
7A	11	5				35																	√			√				
7A	13																													
7A	15																													
7A	24	4.5				24																	√			√				
7A	24	4.5				40																	√			√				
8A	2	3.5				39																	√			√				
8A	3																													
8A	16	5.5				15																	√			√				
11	5																													
11	10																													
12	7																													
13	9																													
13	14																													
13	17																													
14	6																													
14	7																													
16	5																													
17	5																													
17	7	5				54																	√			√				
18	1	4							26														√			√				
18	3	2						405															√			√				
18	4	8						31															√			√				
19	2	6							104														√			√				
19	3	6							245														√			√				
20	2	4						465															√			√				
20	2	6					13																√			√				

TERMINAL TREATMENT / ALTERNATE MATERIALS – HELICAL CORRUGATED METAL

TERMINAL TREATMENT LT./RT. SLOPED ENDS (Not For Conc. Pipe Over 60" Dia.)	SKEW NUMBER	PAVED END SLOPES No.	ALUMINUM – RIVETED, WELDED OR LOCK SEAM 1½"x ¼" PLATE THKN. (Inches)	CROSS SECTION③	2⅔"x ½" PLATE THKN. (Inches)	CROSS SECTION③	3" x 1" PLATE THKN. (Inches)	CROSS SECTION③	COATING⑤	LOCK SEAM SMOOTH WALL SPIRAL RIB ¾" x ¾" @ 7½" O.C. Or ¾" x 1" @ 11½" O.C. PLATE THKN. (Inches)	¾" x ¾" @ 12" O.C. PLATE THKN. (Inches)	CROSS SECTION③	COATING⑤	ALUMINIZED OR GALVANIZED IRON AND STEEL – RIVETED, WELDED OR LOCK SEAM 1½"x ¼" PLATE THKN. (Inches)	CROSS SECTION③	2⅔"x ½" PLATE THKN. (Inches)	CROSS SECTION③	3" x 1" PLATE THKN. (Inches)	CROSS SECTION③	COATING GALVANIZED⑤	COATING ALUMINIZED⑤	LOCK SEAM SMOOTH WALL SPIRAL RIB ¾" x ¾" @ 7½" O.C. Or ¾" x 1" @ 11½" O.C. PLATE THKN. (Inches)	¾" x ¾" @ 12" O.C. PLATE THKN. (Inches)	CROSS SECTION③	COATING GALVANIZED⑤	COATING ALUMINIZED⑤

RIGID / SPECIAL / APPURTENANCES / EXTENSION / REMARKS

SHEET NUMBER	NOTE No.	RIGID PRE-CAST CONCRETE PLAIN ④ I	2	3	REINF. III	IV	V	SPECIAL CAST-IN-PLACE CONCRETE	PVC	DUCTILE IRON		MANHOLES DEPTH, TOP OF COVER TO INVERT (Feet)	DIAMETER OF LARGEST PIPE IN BASE (In.)	CONC. PRECAST	CAST-IN-PLACE	DROP MANHOLE	SPECIAL	INLETS TYPE (Number Required) G-2	G-2 FLOWTHROUGH	CURB INLET	DITCH INLET	DOUBLE INLET	EXTENSION LEFT (Feet)	RIGHT (Feet)	EXTG. PIPE MATERIAL ⑥	REMARKS
7A	2								√			7.7	15	√												
7A	2								√																	
7A	3									√																OUTFALL TO DITCH
7A	4																			1						
7A	11								√																	CONNECT TO EXTG. MANHOLE
7A	13																			1						
7A	15																			1						
7A	24								√																	CONNECT TO EXTG. MANHOLE
7A	24								√																	CONNECT TO EXTG. MANHOLE
8A	2								√																	CONNECT TO EXTG. MANHOLE
8A	3																			1						
8A	16								√																	CONNECT TO EXTG. MANHOLE
11	5																	1								
11	10																	1								
12	7																			1						
13	9																	1								
13	14																	1								
13	17																									
14	6																	1								
14	7																				1					
16	5																	1								
17	5																	1								
17	7								√									1								
18	1								√																	CONNECT TO EXTG. MANHOLE
18	3						√					6.2	24	√												
18	4								√			7.6	18	√												CONNECT TO EXTG. PIPE
19	2								√			7.6	24	√												
19	3								√			7.0	32	√												CONNECT TO EXTG. PIPE-2
20	2						√					5.8	24	√												CONNECT TO EXTG. PIPE
20	2								√																	CONNECT TO EXTG. MANHOLE

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
- Ca = Concrete
- Pl = Plastic
- St = Corrugated steel
- X = Other material, see remarks column

MILWAUKIE
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SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PIPE DATA SHEET

SHEET NO. 2D-1

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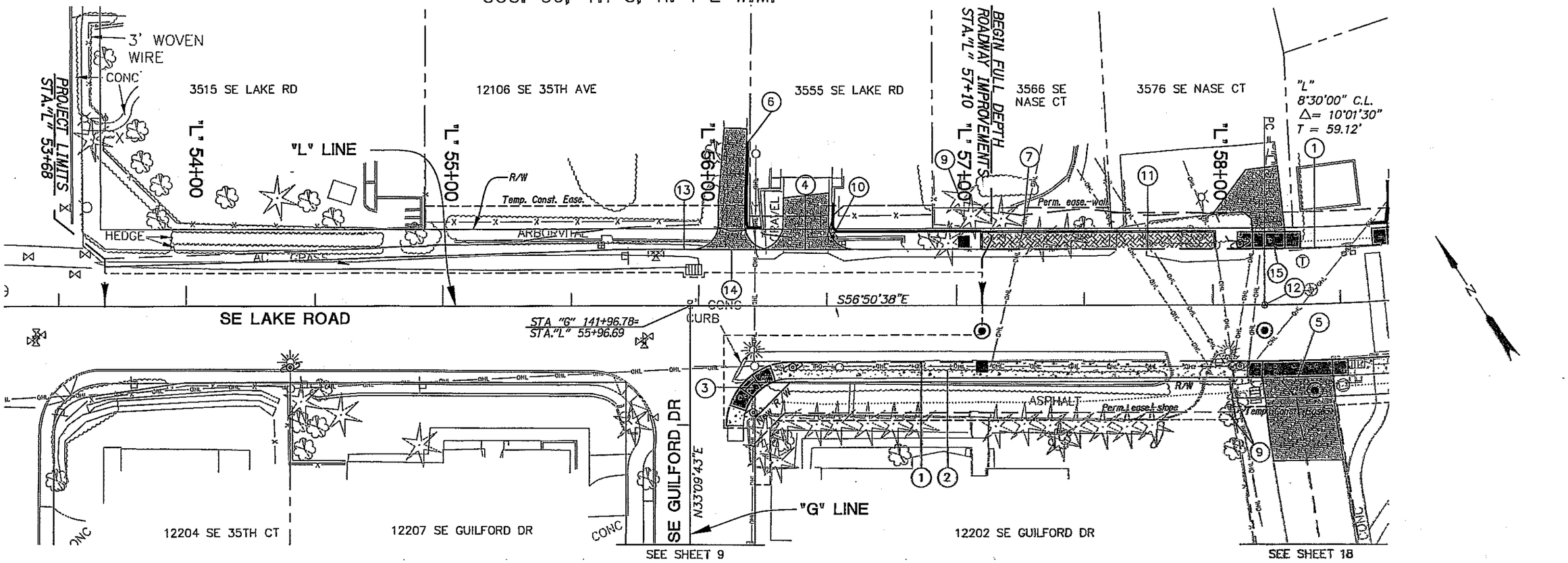

1. Const. curb and gutter (See drg. no. RD700)
2. Const. conc. sidewalk (See drg. no. RD720)
3. Const. P.C. conc. sidewalk ramp (option K) – 1 (For detoils, see sht. 2B) (See drg. no. RD755 & RD757)
4. Sto "L" 56+41.69, w=18' Const. dwy. approach (For details, see sheet 2B–5)
5. Sta "L" 58+32.79, w=27' Const. P.C. conc. dwy. (option N) (Far details, see sht. 2B–5)
6. Const. prefabricated modular retoining wall (Far details, see sht. GC–6)
7. Sta. "L" 56+51.81 to Sta. "L" 58+05.83 Const. MSE retaining wall "C1" (For details, see sht. GC)
8. Not used
9. Protect tree. Contact arborist when constructing near tree
10. Remove and reinstoll moilbox – 1 (See drg. no. RD100)
11. Const. modified curb ond gutter (For details, see sht. 2B–11)
12. Install monument box (See City of Milwaukie drg. no. 513)
13. Proposed edge of pavement
14. Sto "L" 56+12.57, w=10' Const. dwy. appraach (For details, see sheet 2B–5) (See drg. no. RD715)
15. Sto "L" 58+22.01, w=12' Const. P.C. Conc. dwy. (Option H) (For details, see sheet 2B–5)

LEGEND

- Pedestrian ramp of driveway approoch
- P.C. concrete or AC paving driveway connection
- Bio retention facility

MILWAUKIE Dogwood City of the West

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Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA "L" 53+50 TO "L" 58+50

SHEET NO. 3

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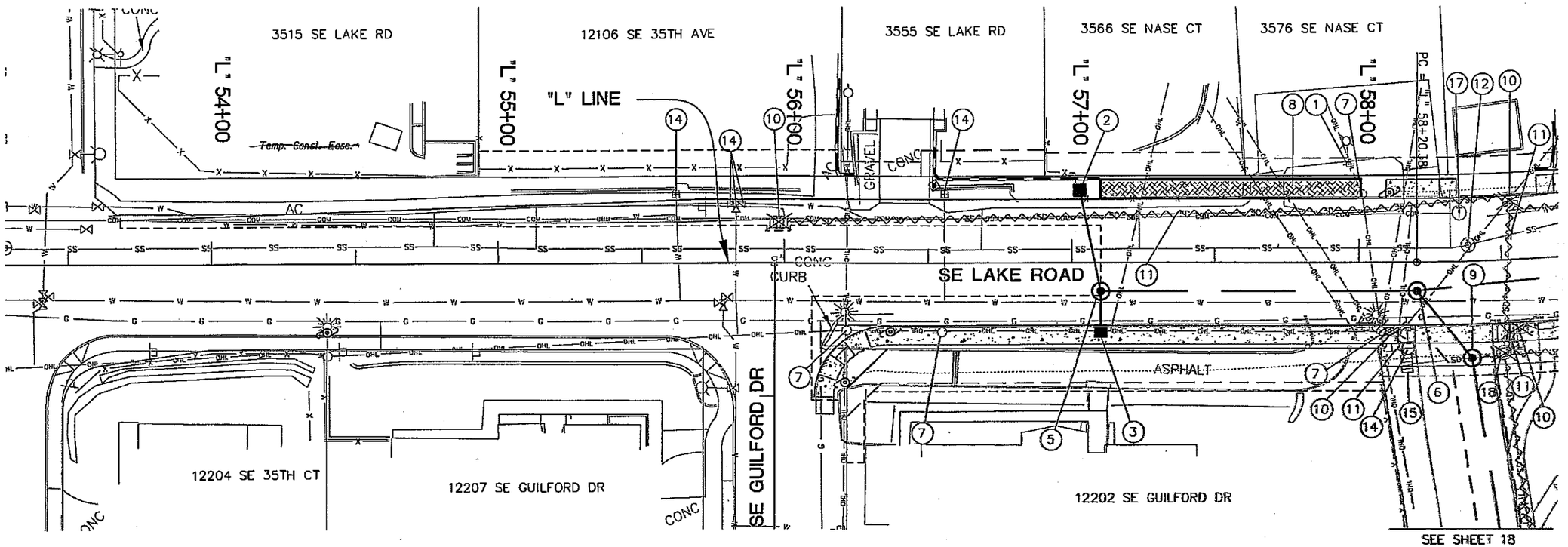

(1) *Protect existing light pole*

(2) *Sta. "L" 57+00.70, 25.5' Lt.*
Const. ditch inlet
I.E. 95.72
(See City of Milwaukie Drg. Nos. 605, 606, and 607)

(3) *Sta. "L" 57+10.00, 22.0' Rt.*
Const. curb inlet
I.E. 93.19
(See City of Milwaukie Drg. Nos. 604A, and 604B)

(4) *Not used*

(5) *Sta. "L" 57+10.00, 10' Rt.*
Const. sedimentotion manhole,
Rim Elev. = 99.25
Inst. 12" storm sewer pipe, 10' depth – 12'
Inst. 12" storm sewer pipe, 10' depth – 34'
Inst. 12" storm sewer pipe, 10' depth – 35'
(See City of Milwaukie Drg. Nos. 611, 615, 616, and 618)

(6) *Sta. "L" 58+20.38, 10' Rt.*
Const. sedimentotion monhole, 60" dia.,
Rim Elev. = 99.82
Inst. 15" storm sewer pipe, 10' depth – 110'
Inst. 18" storm sewer pipe, 10' depth – 157'
(See drg. no. RD346)

(7) *Relocote existing utility pole (by others)*

(8) *Sta. "L" 56+89, 22.5' Lt. to "L" 58+01, 22.5' Lt.*
Const. bio-retention facility "N1"
(For detoils, see sht. 2B-10)

(9) *See sht. 18, note 4*

(10) *Abandon existing Inlet – 4*

(11) *Plug and obandon pipe in ploce*

(12) *Minor adjust manhole*

(13) *Not used*

(14) *Adjust box – 6*

(15) *Adjust inlet*

(16) *Not used*

(17) *Minor adjust communicotions manhole*

(18) *Abondon existing monhole*

LEGEND

Bio retention facility

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

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DARRIN B. STAIRS
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otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
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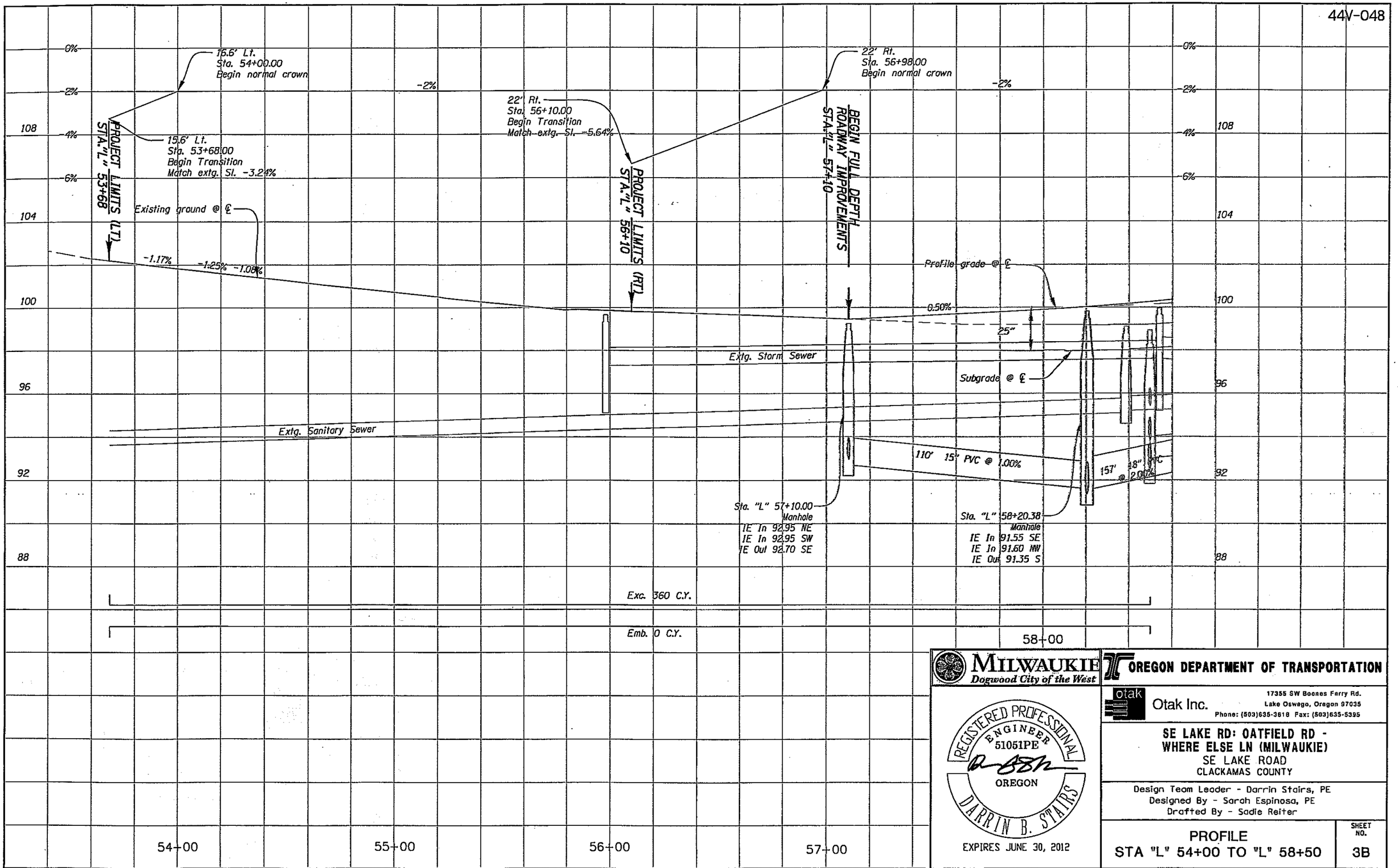
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA "L" 53+50 TO "L" 58+50

SHEET NO. 3A



MILWAUKIE
Dogwood City of the West

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Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 54+00 TO "L" 58+50

SHEET NO. 3B

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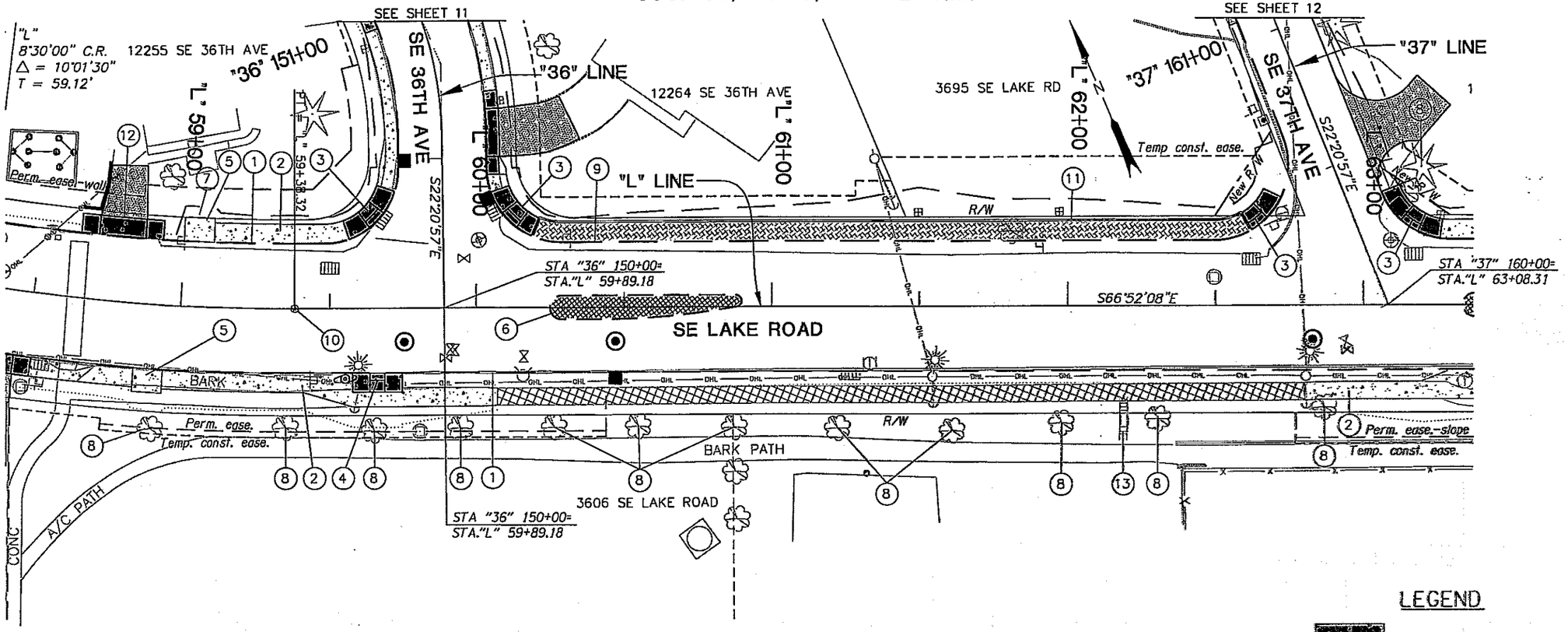

1. Const. curb and gutter
2. Const. conc. sidewalk
3. Const. P.C. conc. sidewalk ramp (option K) – 4
4. Const. porallel sidewalk ramp
5. Const. Trimet bus stop (For detoils, see sht 2B–9)
6. Const. std. curb median island. (For details, see sht. 2B–13)
7. Sta. "L" 58+85.61 to Sta. "L" 59+19.50 Const. prefabricated modular retoining woll "C4" (for drg. nos., see sheet 1A)
8. Protect tree. Contact arborist when constructing near tree
9. Const. modified curb ond gutter
10. Install monument box
11. Const. modified std. curb (For details, see sht. 2B–11)
12. Sta. "L" 58+78.30, W=X Const. P.C. conc. dwy. (Option H) (For details, see sht. 2B–5)
13. Protect extg. sign

LEGEND

- Pedestrian ramp of driveway approach
- P.C. concrete or AC paving driveway connection
- Bio retention facility
- Preserve and protect existing sidewalk
- Landscaped median island

MILWAUKIE
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Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinasa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA "L" 58+50 TO "L" 63+00

SHEET NO. 4

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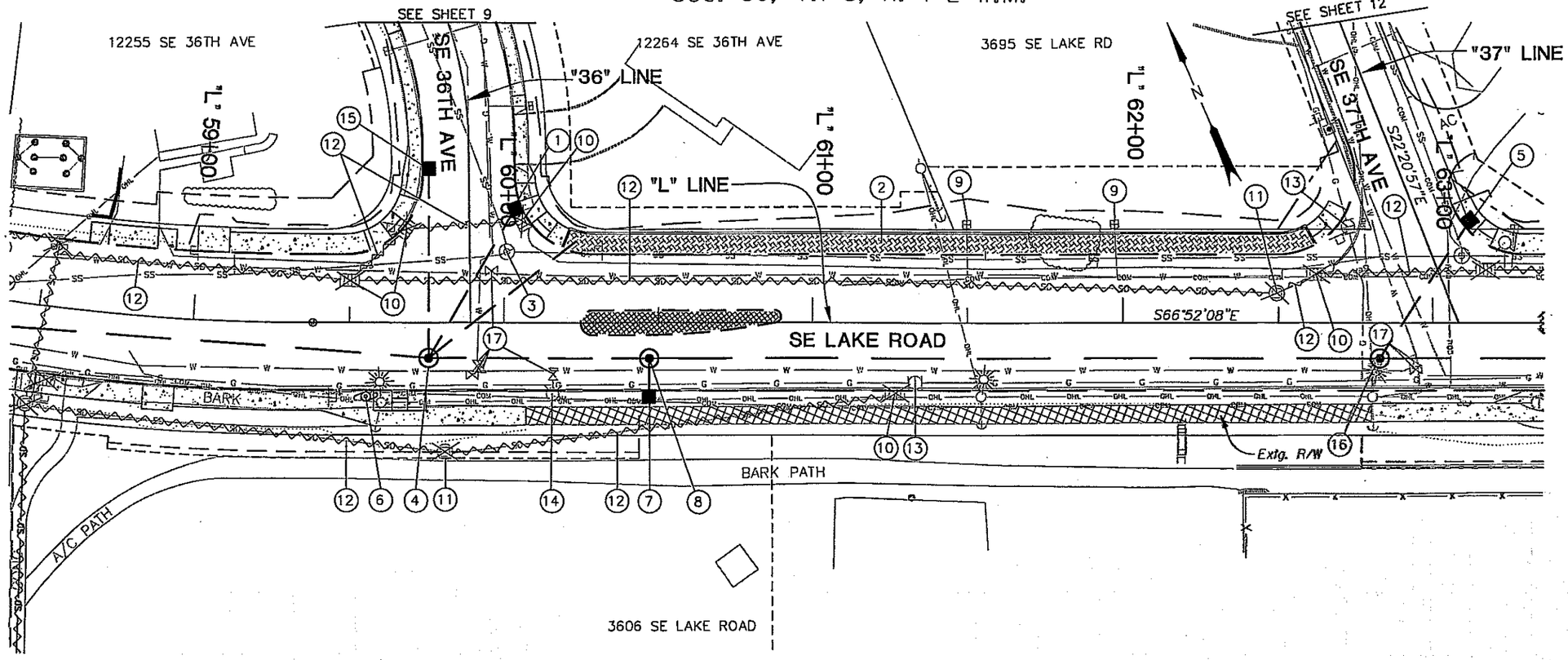

(1) *See sheet 11, note 10*

(2) *Sta. "L" 60+18.78 to "L" 62+61.90, 22.50' Rt.*
Const. bio-retention facility "N2"
(For details, see sheet 2B-10)

(3) *Minor adjust monhole*

(4) *Sta. "L" 59+75.33, 11.50' Rt.*
Const. sedimentation monhole 60" dia.,
Rim Elev. = 101.74
Inst. 12" storm sewer pipe, 5' depth - 61'
Inst. 12" storm sewer pipe, 10' depth - 57'
Inst. 12" storm sewer pipe, 5' depth - 61'
Inst. 15" storm sewer pipe, 10' depth - 72'

(5) *See sht. 12, note 7*

(6) *Relocate existing utility pole (by others)*

(7) *Sta. "L" 60+47.05, 22.00' Rt.*
Const. curb inlet
I.E. 96.68

(8) *Sta. "L" 60+47.05, 11.50' Rt.*
Const. sedimentotion monhole,
Rim Elev. = 102.91
Inst. 12" storm sewer pipe, 10' depth - 10'
Inst. 15" storm sewer pipe, 10' depth - 236'

(9) *Const. 1" water service connections - 2*
(See City of Milwaukie drg. no. 401)

(10) *Abondon existing inlet - 5*

(11) *Abondon existing manhole - 2*

(12) *Plug and abandon pipe in ploce*

(13) *Adjust box - 3*

(14) *Sta. "L" 60+15.78, 25' Rt.*
Move fire hydrant.
(See City of Milwaukie drg. no. 400)

(15) *See sht. 11, note 5*

(16) *Sta. "L" 62+82.83, 11.5' Rt.*
Const. sedimentotion manhole,
Rim Elev. = 106.75
Inst. 12" storm sewer pipe, 10' depth - 51'
Inst. 15" storm sewer pipe, 10' depth - 146'

(17) *Inst. new valve box over extg. valve - 6*
(See City of Milwaukie drg. no. 409)

LEGEND

Preserved and protected existing sidewalk

Londscaped medion island

Bio retention facility

MILWAUKIE
Dogwood City of the West

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Lake Oswego, Oregon 97035
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Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA "L" 58+50 TO "L" 63+00

SHEET NO. 4A

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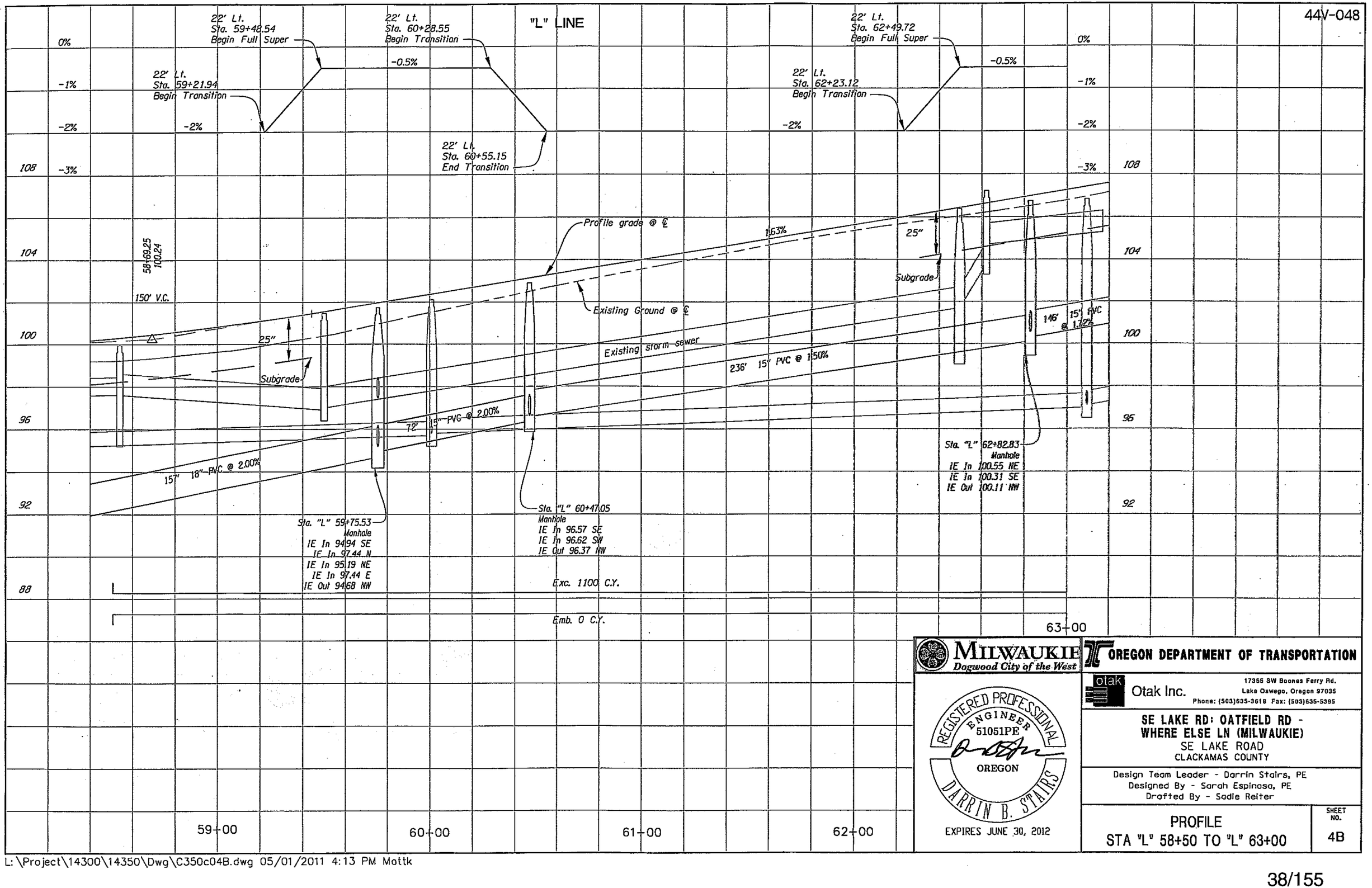

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Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 58+50 TO "L" 63+00

SHEET NO. 4B

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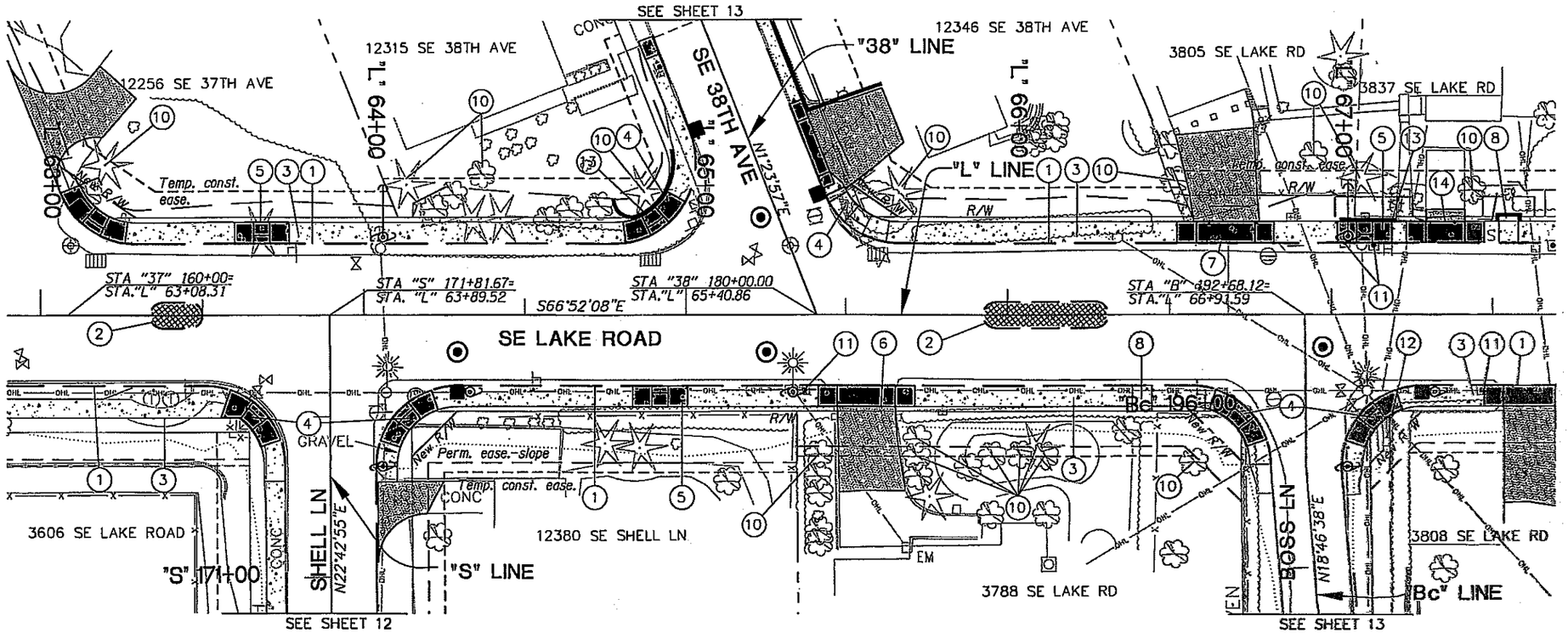
Sec. 36, T.1 S, R. 1 E W.M.



(1) *Const. P.C. conc. curb and gutter*

(2) *Const. standard curb median island (For details, see sht. 2B-13)*

(3) *Const. conc. sidewalk*

(4) *Const. sidewalk ramp (option "K") - 6 (For details, see sht. 2B-2)*

(5) *Const. parallel sidewalk ramp - 2*

(6) *Sta "L" 65+56.36, w=18' Const. P.C. conc. dwy. (option "N") (For details, see sheet 2B-6)*

(7) *Sta "L" 66+67.16, w=18' Const. P.C. conc. dwy. (option "N") (For details, see sheet 2B-6)*

(8) *Const. Trimet bus stop (For details, see sheet 2B-9)*

(9) *Not used*

(10) *Protect tree. Contact arborist when constructing near tree*

(11) *Remove and reinstall mailbox - 4*

(12) *Remove and reinstall sign*

(13) *Sta. "L" 64+73.20 to Sta. "38" 180+64.04 Const. prefabricated modular retaining wall "C5" (for drg. nos., see sheet 1A)*

(14) *Sta "L" 67+35.52, w=12' Const. P.C. conc. dwy. (option "N") (For details, see sheet 2B-6)*

LEGEND

Pedestrian ramp of driveway approach

P.C. concrete or AC paving driveway connection

Bio retention facility

MILWAUKIE
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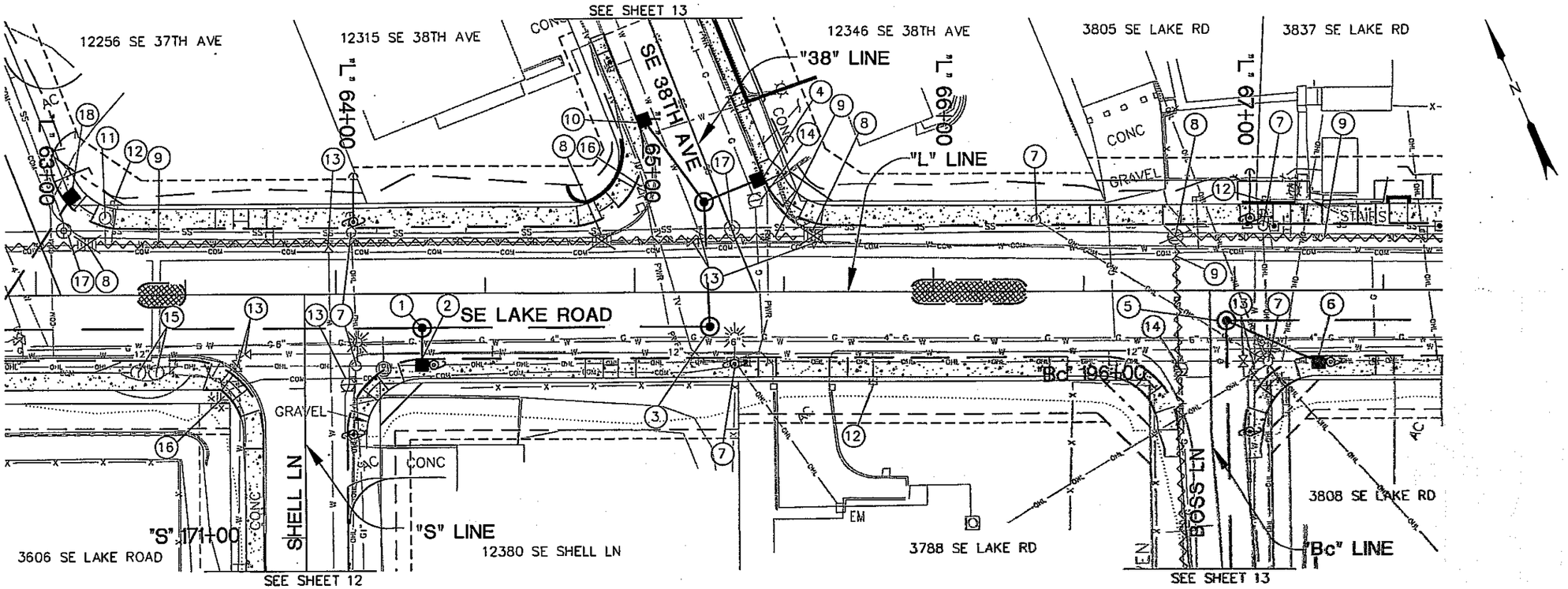
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA 63+00 TO 67+50

SHEET NO. 5

Sec. 36, T.1 S, R. 1 E W.M.



1. *Sta. "L" 64+28.85, 11.5' Rt.*
   Const. manhole,
   Rim Elev. = 109.23
   Inst. 12" storm sewer pipe, 5' depth – 11'
   Inst. 15" storm sewer pipe, 10' depth – 96'
2. *Sta. "L" 64+28.85, 22' Rt.*
   Const. curb inlet
   I.E. 103.12
3. *Sta. "L" 65+25.26, 11.5' Rt.*
   Const. monhole,
   Rim Elev. = 110.70
   Inst. 12" storm sewer pipe, 10' depth – 42'
4. *See sht. 13, note 14*
5. *Sta. "L" 66+97.30, 10' Rt.*
   Const. monhole,
   Rim Elev. = 113.53
   Inst. 12" storm sewer pipe, 5' depth – 33'
   Inst. 18" storm sewer pipe, 10' depth – 211'
6. *Sta. "L" 67+28.25, 22' Rt.*
   Const. curb inlet
   I.E. 111.08
7. *Relocate existing utility pole (by others)*
8. *Abandon Inlet – 4*
9. *Plug and abandon pipe in place*
10. *See sht. 13, note 9*
11. *Sta. "L" 63+23.23, 25' Lt.*
    Move fire hydrant
12. *Const. 1" water service connections – 4*
13. *Inst. new water valve box over extg. valve – 7*
14. *Adjust box – 2*
15. *Minor adjust communicotions manhole – 2*
16. *Relocate communicotions riser (by others)*
17. *Minor adjust monhole – 2*
18. *See sht. 12, note 7*

LEGEND

Landscaped median planter

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA 63+00 TO 67+50

SHEET NO. 5A

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"L" LINE

0% -0.5% -1% -2% -3%

22' Lt.
Sta. 63+29.40
Begin Transition

22' Lt.
Sta. 63+56.00
End Transition

Existing gound @ ℄

Profile grade @ ℄

1.63%

25"

Subgrade

Exstg. storm sewer

146' 15" PVC @ 1.72%

96' 15" PVC @ 1.20%

Exstg. sanitary sewer

Sta. "L" 64+28.85
Manhole
IE In 103.01 SE
IE In 103.06 SW
IE Out 102.81 NW

Sta. "L" 65+25.26
Manhole
IE In 104.37 N
IE Out 104.17 NW

Exc. 1297 C.Y.

Emb. 0 C.Y.

25"

Subgrade

Exstg. storm sewer

211' 18" PVC @ 1.33%

Exstg. sanitary sewer

Sta. "L" 66+97.30
Manhole
IE In 106.00 SE
IE In 108.50 SE
IE Out 105.81 S

116 112 108 104 100 96

63+00 64+00 65+00 66+00 67+00

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CLACKAMAS COUNTY

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Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 63+00 TO "L" 67+50

SHEET NO. 5B

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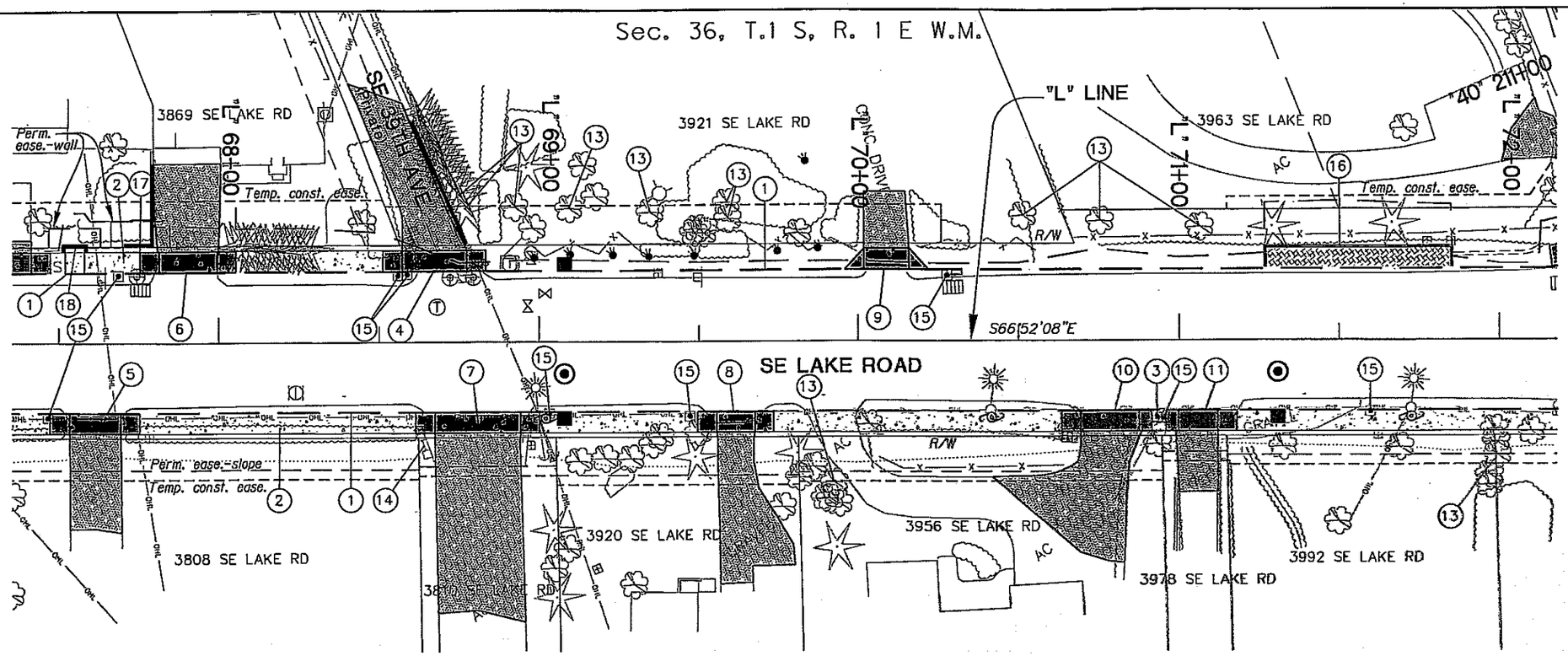

(1) Const. P.C. conc. curb and gutter

(2) Const. conc. sidewalk

(3) Sta "L" 70+95.80 to 70+99.80
Const. curb and gutter with 4" exposure (E=4) between driveways

(4) Sta "L" 68+67.16, w=20'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-7)

(5) Sta "L" 67+61.44, w=16'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-6)

(6) Sta "L" 67+90.45, w=18'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-6)

(7) Sta "L" 68+80.77, w=27'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-7)

(8) Sta "L" 69+61.65, w=12'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-7)

(9) Sta "L" 70+08.91, w=14'
Const. P.C. conc. dwy. (option H)
(for details, see sheet 2B-7)

(10) Sta "L" 70+78.54, w=18'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-7)

(11) Sta "L" 71+05.80, w=12'
Const. P.C. conc. dwy. (option N)
(for details, see sheet 2B-7)

(12) Not used

(13) Protect tree. Contact arborist when constructing near tree

(14) Remove and reinstall sign

(15) Remove and reinstall mailbox -- 7

(16) Const. modified std. curb
(For details, see sht. 2B-10)

(17) Construct prefabricated modular retaining wall
(See details, sheet GC-6)

(18) Sta. "L" 67+52.07 to Sta. "L" 67+58.07
Const. MSE retaining wall "C6"
(for drg. nos., see sheet 1A)

LEGEND

- Pedestrian ramp of driveway approach
- P.C. concrete or AC paving driveway connection
- Bio retention facility

MILWAUKIE
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Lake Oswego, Oregon 97035
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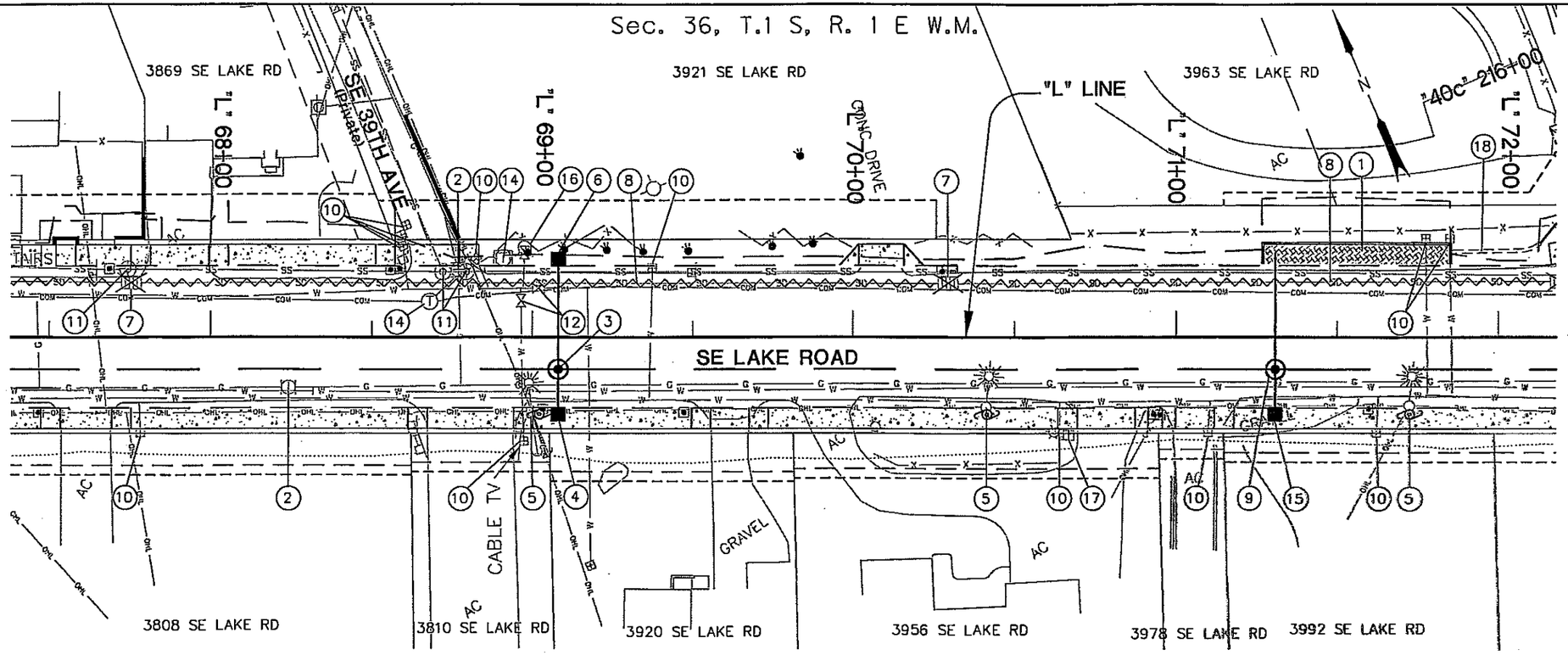
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinasa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA 67+50 TO 72+00

SHEET NO. 6



(1) *Sta. "L" 71+26.50 to "L" 71+85.50, 22.50' Lt.*
Const. bio-retention facility "N3"
(For details, see sht. 2B-10)

(2) *Adjust box – 2*

(3) *Sta. "L" 69+08.07, 10.00' Rt.*
Const. manhole,
Rim Elev. = 116.48
Inst. 12" storm sewer pipe, 10' depth – 32'
Inst. 12" storm sewer pipe, 5' depth – 12'
Inst. 15" storm sewer pipe, 10' depth – 223'

(4) *Sta. "L" 69+08.07, 22.00' Lt.*
Const. curb inlet
I.E. 110.80

(5) *Relocate existing utility pole. (By others)*

(6) *Sta. "L" 69+08, 22.0' Lt.*
Const. curb inlet
I.E. 111.80

(7) *Abandon Inlet – 2*

(8) *Plug and abandon pipe in place*

(9) *Sta. "L" 71+30.73, 10.00' Rt.*
Const. manhole,
Rim Elev. = 119.27
Inst. 12" storm sewer pipe, 10' depth – 36'
Inst. 12" storm sewer pipe, 10' depth – 12'
Inst. 15" storm sewer pipe, 10' depth – 109'

(10) *Const. 1" water service connections – 13*

(11) *Minor adjust manhole – 3*

(12) *Inst. new valve box over extg. valve – 2*

(13) *Not used*

(14) *Minor adjust communications manhole – 2*

(15) *Sta. "L" 71+30.74, 22.00' Rt.*
Const. curb inlet
I.E. 114.28

(16) *Sta. "L" 68+97.53, 27.5' Lt.*
Move fire hydrant

(17) *Reconnect extg. irrigation system 1" service*
Test valves and backflow assembly

(18) *Sta. "L" 71+85.49 to "L" 72+13.11*
Const. rock lined V-ditch – 28'
Ditch exc. – 1.4 cu. yd.
Class 50 riprop – 4.1 cu. yd.
(For details, see sht. 2B-13)

LEGEND

Bio retention facility

MILWAUKIE
Dogwood City of the West

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Lake Oswego, Oregon 97035
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CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA 67+50 TO 72+00

SHEET NO. 6A

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"L" LINE

0%
-1%
-2%
-3%

22' Lt.
Sta. 71+86.64
Begin Transition

124
120
116
112
108
104

67+78.86
115.07'

1.63%
1.25%
0%
-1%
-2%

25"

Profile grade @ ℄
Existing ground @ ℄
Subgrade

Exist. storm sewer
223' 15" PVC @ 1.00%
Exist. sanitary sewer

109' 15" PVC @ 1.00%

211' 18" PVC @ 1.50%
Exist. sanitary sewer

Exist. storm sewer

Sta. "L" 69+08.07
Manhole
IE In 109.41 SE
IE In 109.50 SW
IE In 109.50 NE
IE Out 109.16 NW

Sta. "L" 71+30.73
Manhole
IE In 111.84 SE
IE In 111.90 SW
IE In 111.90 NE
IE Out 111.54 NW

Exc. 1386 C.Y.
Emb. 0 C.Y.

68+00 69+00 70+00 71+00 72+00

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Lake Oswego, Oregon 97035
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CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 67+50 TO "L" 72+00

SHEET NO. 6B

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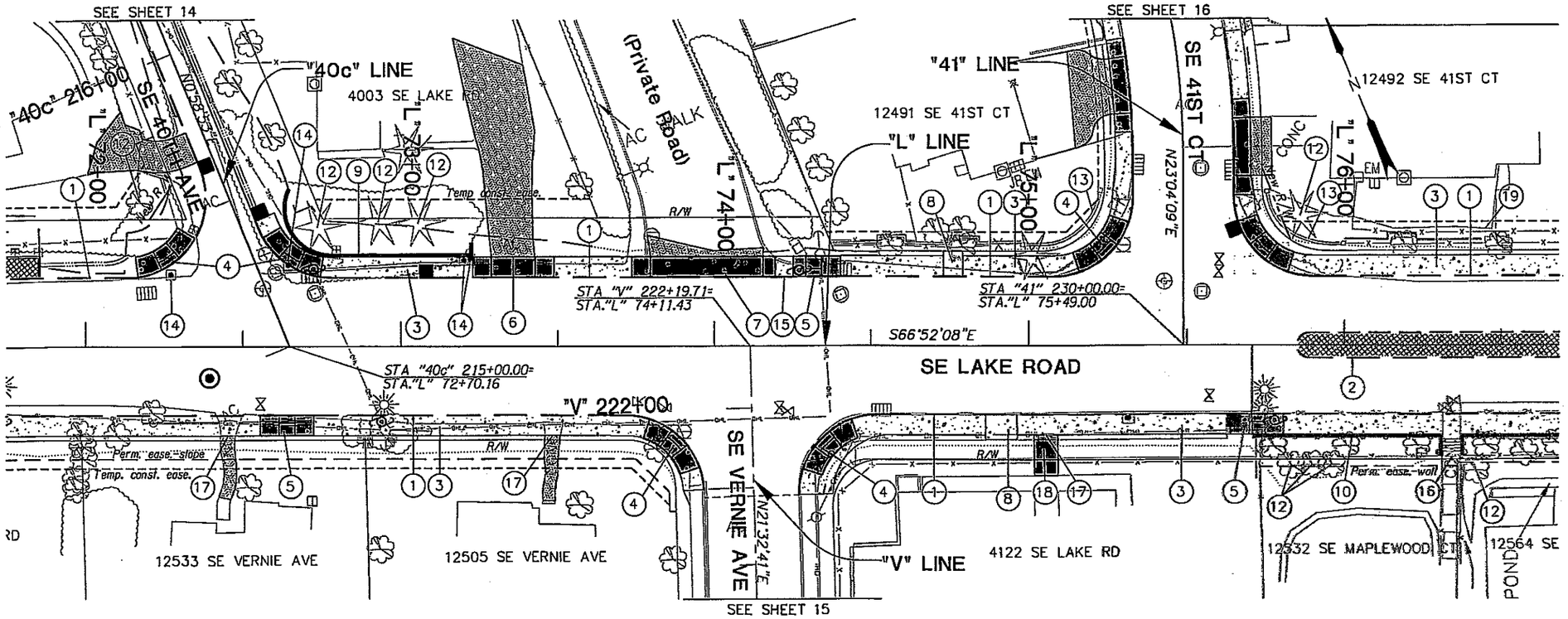
Sec. 36, T.1 S, R. 1 E & Sec. 31, T. 1 S, R. 2 E W.M.



1. Const. P.C. conc. curb and gutter
2. Const. standard curb median island. (See detail, sht. 2B–13)
3. Const. conc. sidewalk
4. Const. sidewalk ramp (option K) – 6 (For details, see sht. 2B–3)
5. Const. parallel sidewalk ramp – 3
6. Sta "L" 73+35.79, w=14' Const. P.C. conc. dwy. (optian N) (For details, see sheet 2B–7)
7. Sta "L" 74+03.60, w=36' Const. P.C. conc. dwy. (option N) (For details, see sheet 2B–7)
8. Const. Trimet bus stop
9. Sta. "40" 211+31.98, 1' Rt. to Sta. "L" 73+22.78, 32.86' Lt. Const. prefabricated modular retaining wall "C9" (For drg. nos., see sheet 1A)
10. Sta. "L" 75+70.70, 28.49' Rt. to Sta. "L" 76+31.37, 35.43' Rt. Const. MSE retoining woll "F1" Install CL–4 Chain Link Fence w/ vinyl fabric (For drg. nos., see sheet 1A)
11. Remove tree
12. Protect tree. Contact arborist when constructing near tree
13. Preserve ond protect brick wall
14. Remove ond reinstoll moilbox – 4
15. Sta "L" 74+19.60 to "L" 74+25.33, 22' Lt. Const. curb ond gutter with 4" exposure (E=4") between driveways
16. Const. conc. stairs (See std. drg. no. RD120)
17. Const. connection to extg. walkway
18. Const. connection to extg. walkway (Maximum slope of 8.33%)
19. Protect existing fence

LEGEND

- Pedestrian ramp of driveway approach
- P.C. concrete or AC paving driveway connection
- Landscape median island

MILWAUKIE
Dogwood City of the West

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Lake Oswego, Oregon 97035
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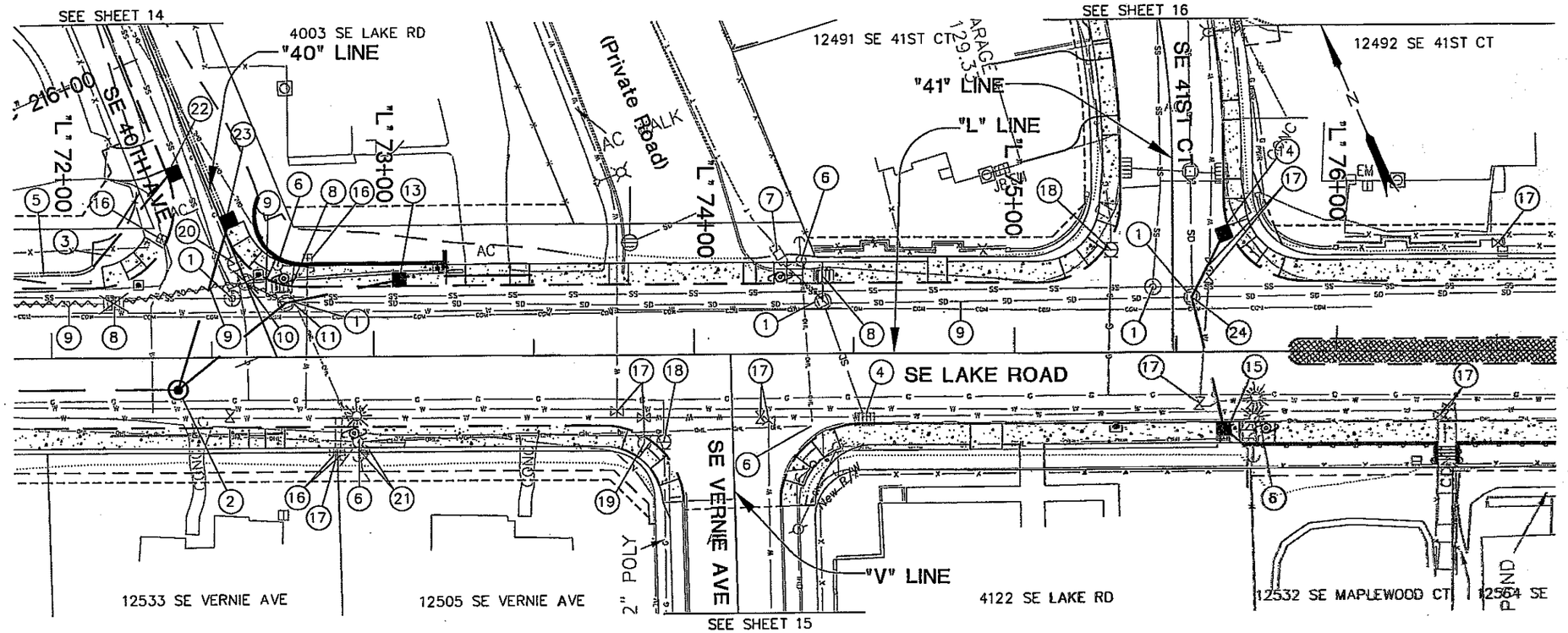
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA 72+00 TO 76+50

SHEET NO. 7

Sec. 36, T.1 S, R. 1 E & Sec. 31, T. 1 S, R. 2 E W.M.



(1) *Minor adjust manhole – 5*

(2) *Sto. "L" 72+39.46, 10' Rt.*
Const. monhole,
Rim Elev. = 120.63
Inst. 12" storm sewer pipe, 10' depth – 54'
Connect to extg. manhole
Inst. 15" storm sewer pipe, 10' depth – 43'

(3) *Inst. 12" storm sewer pipe, 5' depth – 36'*

(4) *Adjust inlet*

(5) *See sht. 6A, note 18*

(6) *Relocote existing utility pole (By others)*

(7) *Adjust communications vault (by others)*

(8) *Abandon existing Inlet – 3*

(9) *Plug and obandon pipe in place*

(10) *Abandon existing manhole*

(11) *Sto. "L" 72+72.98, 17.0' Lt.*
Connect to existing monhole
Inst. 12" storm sewer pipe, 5' depth – 35'

(12) *Not used*

(13) *Sto "L" 73+08.02, 22' Lt.*
Const. curb inlet
I.E. 117.16

(14) *See note 5, sht. 16*

(15) *Sta "L" 75+64.92, 22' Rt.*
Const. curb inlet
I.E. 120.18

(16) *Const. 1" woter service connectian – 4*

(17) *Inst. new valve box over extg. volve – 11*

(18) *Adjust box – 2*

(19) *Sto. "L" 73+76.54, 25' Rt.*
Move fire hydront

(20) *Not used*

(21) *Adjust communicatians riser (by others)*

(22) *See sht. 14, note 6*

(23) *See sht. 14, note 7*

(24) *Sto. "L" 75+54.90, 17.1' Lt.*
Connect to existing manhole – 2
Inst. 12" storm sewer pipe, 5' depth – 24'
Inst. 12" storm sewer pipe, 10' depth – 40'

LEGEND

Landscaped median island

MILWAUKIE
Dogwood City of the West

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OREGON
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Lake Oswego, Oregon 97035
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SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA 72+00 TO 76+50

SHEET NO. 7A

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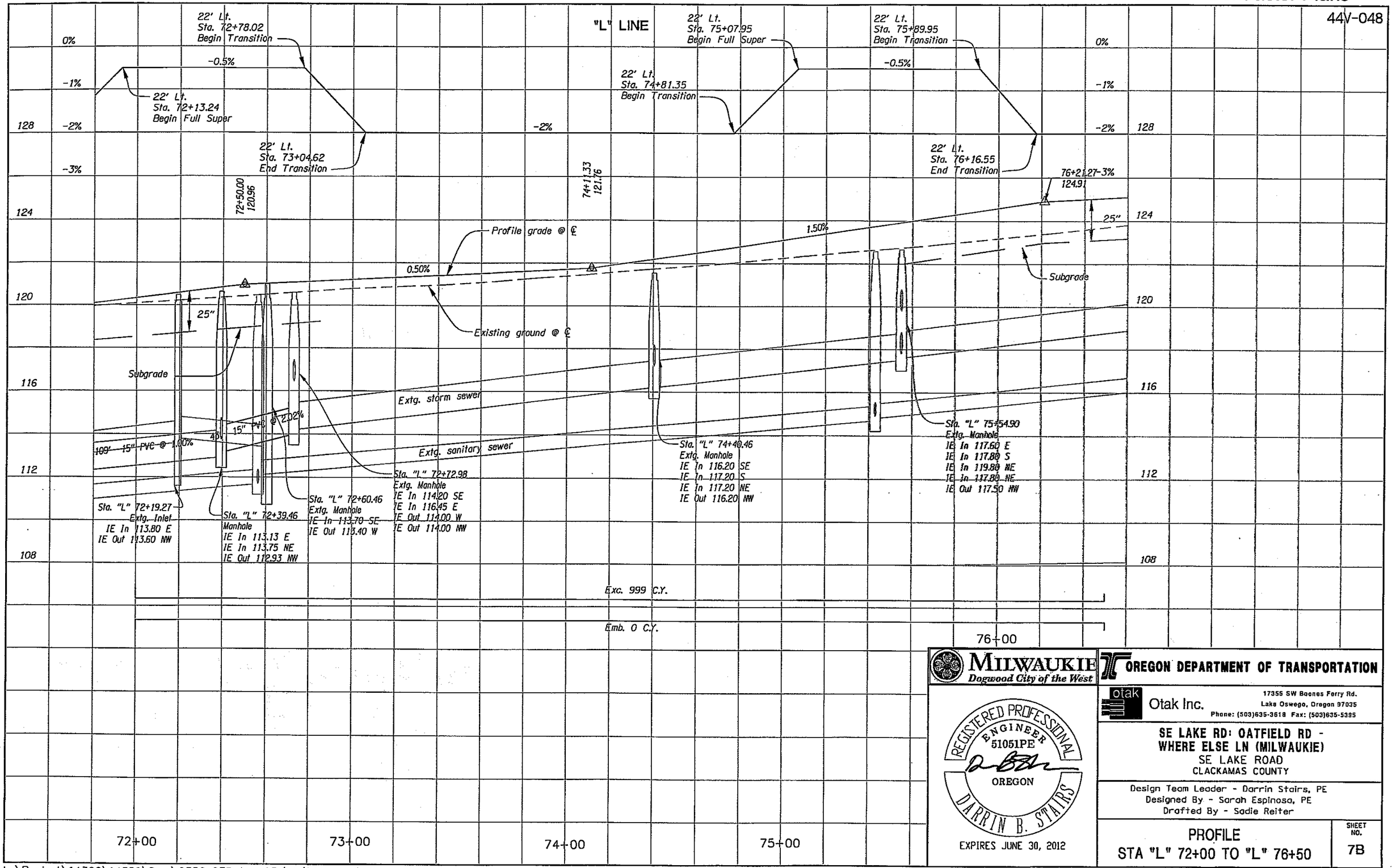

MILWAUKIE
Dogwood City of the West

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Drafted By - Sadie Reiter

PROFILE
STA "L" 72+00 TO "L" 76+50

SHEET NO. 7B

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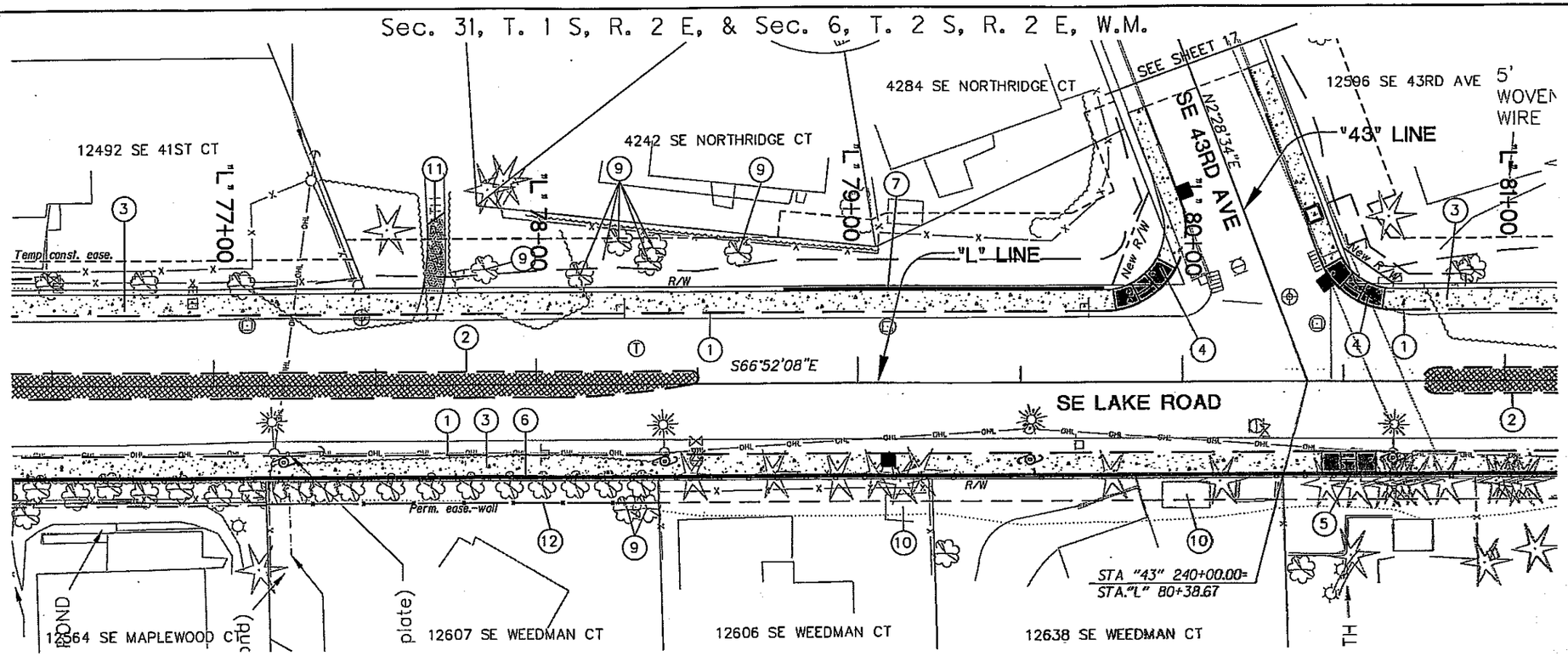

(1) *Const. P.C. conc. curb and gutter*

(2) *Const. standard curb median island. (For details, see sht. 2B-13)*

(3) *Const. conc. sidewalk*

(4) *Const. sidewalk ramp (option K) – 2*

(5) *Const. parallel sidewalk ramp*

(6) *Sta. "L" 76+37.12, 35.36' Rt. to Sta. "L" 81+30.48, 30.11' Rt. Const. MSE retaining wall "F2" Inst. CL-4 Chain Link Fence w/ vinyl fabric (for drg. nos., see sheet 1A)*

(7) *Sta. "L" 78+77.03, 23.5' Lt. to Sta. "L" 79+76.07, 23.5' Lt. Const. prefabricated modular retaining wall "C9" (for drg. nos., See sheet 1A)*

(8) *Not used*

(9) *Protect tree. Contact arborist when constructing neor tree*

(10) *Protect existing shed*

(11) *Construct connection to existing pathway. Max. slope = 15%*

(12) *Sta. "L" 77+17.46 to Sta. "L" 78+37.85 Const. Temporary type CL chain link fence at perm. ease. location*

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CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA 76+50 TO 81+00

SHEET NO. 8

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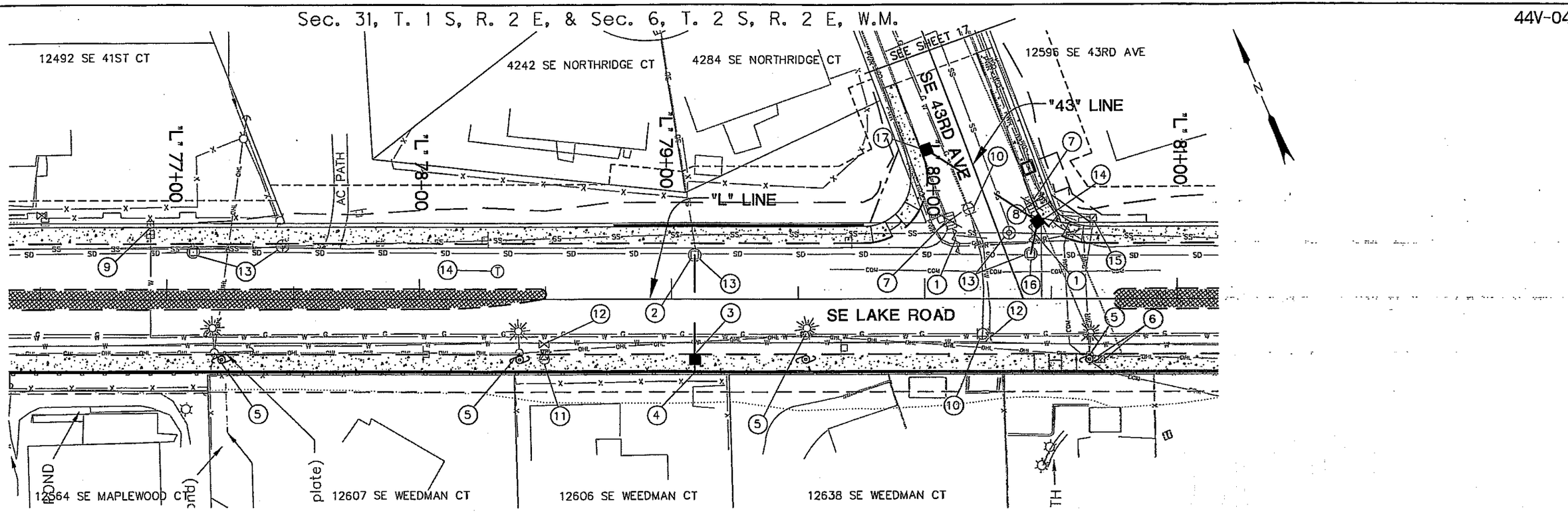

(1) *Plug and abandon pipe in place*

(2) *Sta. "L" 79+09.26, 17.4' Lt.*
Connect to extg. manhole
Install 12" storm sewer pipe, 10' depth – 39'

(3) *Sta. "L" 79+09.26, 22.00' Rt.*
Const. curb inlet
I.E. 122.98

(4) *Install wall drain lateral*

(5) *Relocate existing utility pole (By others)*

(6) *Adjust communicotions riser (by others)*

(7) *Abandon inlet*

(8) *Relocate existing power vault (by others)*

(9) *Const. 1" water service connection*

(10) *Adjust box – 2*

(11) *Sta. "L" 78+49.75, 25' Rt.*
Move fire hydrant

(12) *Inst. new valve box over extg. valve – 2*

(13) *Minor adjust monhole – 5*

(14) *See sht. 17, note 7*

(15) *Relocate communicotions riser (by others)*

(16) *Sta. "L" 80+41.80, 17.8' Lt.*
Connect to extg. manhole
Install 12" storm sewer pipe, 5' depth – 15'

(17) *See sht. 17, note 5*

LEGEND

Landscaped median island

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Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA 76+50 TO 81+00

SHEET NO. 8A

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"L" LINE

130

126

122

118

114

Profile grade @ ℄

0.50%

25"

Existing ground @ ℄

Subgrade

Extg. storm sewer

Extg. sanitary sewer

Sta. "L" 77+10.49
Extg. Manhole
IE In 119.60 SE
IE Out 119.50 W

Sta. "L" 79+09.26
Extg. Manhole
IE In 120.50 SE
IE In 120.60 SW
IE In 120.60 N
IE Out 120.40 NW

Sta. "L" 80+41.80
Extg. Manhole
IE In 121.40 NE
IE In 121.30 SE
IE Out 121.20 NW

25"

Subgrade

Exc. 1072 C.Y.

Emb. 4 C.Y.

77+00 78+00 79+00 80+00 81+00

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Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 76+50 TO "L" 81+00

SHEET NO. 8B

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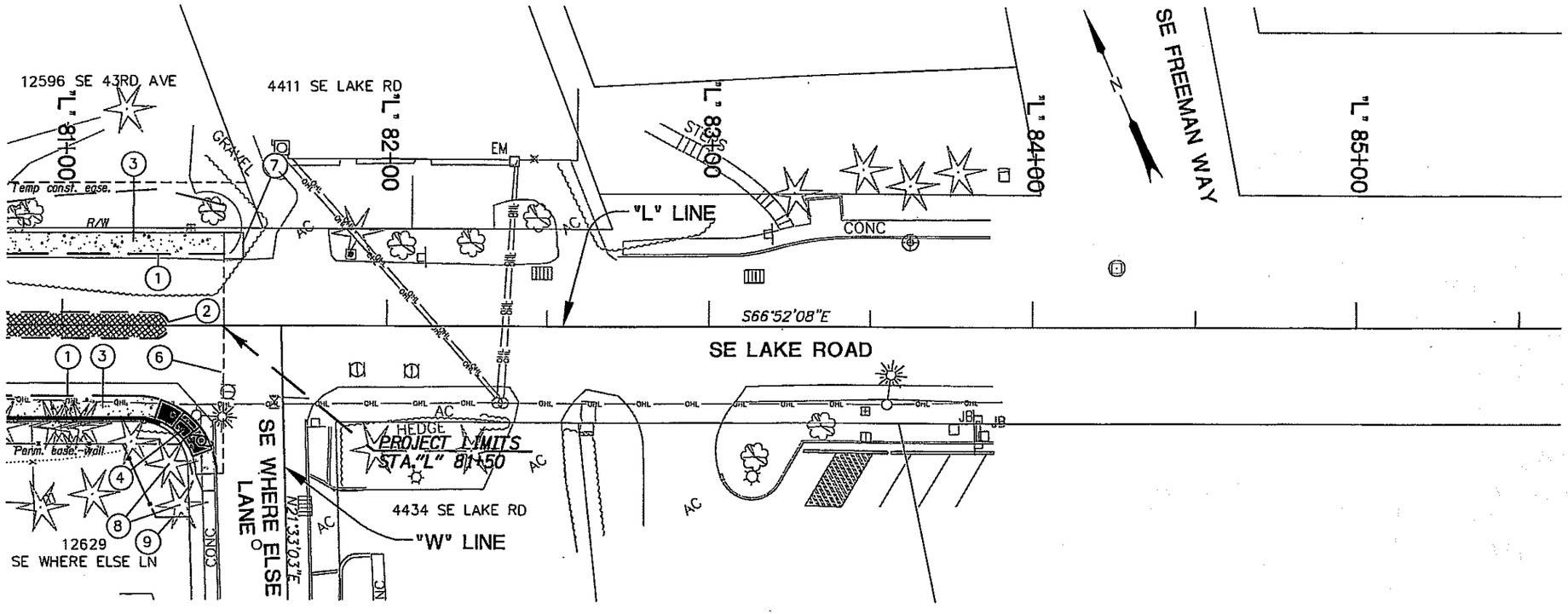
Sec. 6, T. 2 S, R. 2 E, W.M.



(1) *Const. P.C. conc. curb and gutter*

(2) *Const. standard curb median island. (For details, see sht. 2B-13)*

(3) *Const. canc. sidewalk*

(4) *Const. sidewalk ramp (option K) - 1*

(5) *Not used*

(6) *Limits of full depth reconstruction*

(7) *Const. sidewalk ramp and landing (Option F) (See drg. no. RD756)*

(8) *Protect tree. Contact arborist when constructing near tree.*

(9) *Sta. "L" 80+91.00 to Sta. "W" 251+18.15 Const. temp type CL Chain link fence at easement lines.*

LEGEND

Pedestrian ramp of driveway approach

Landscape median island

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

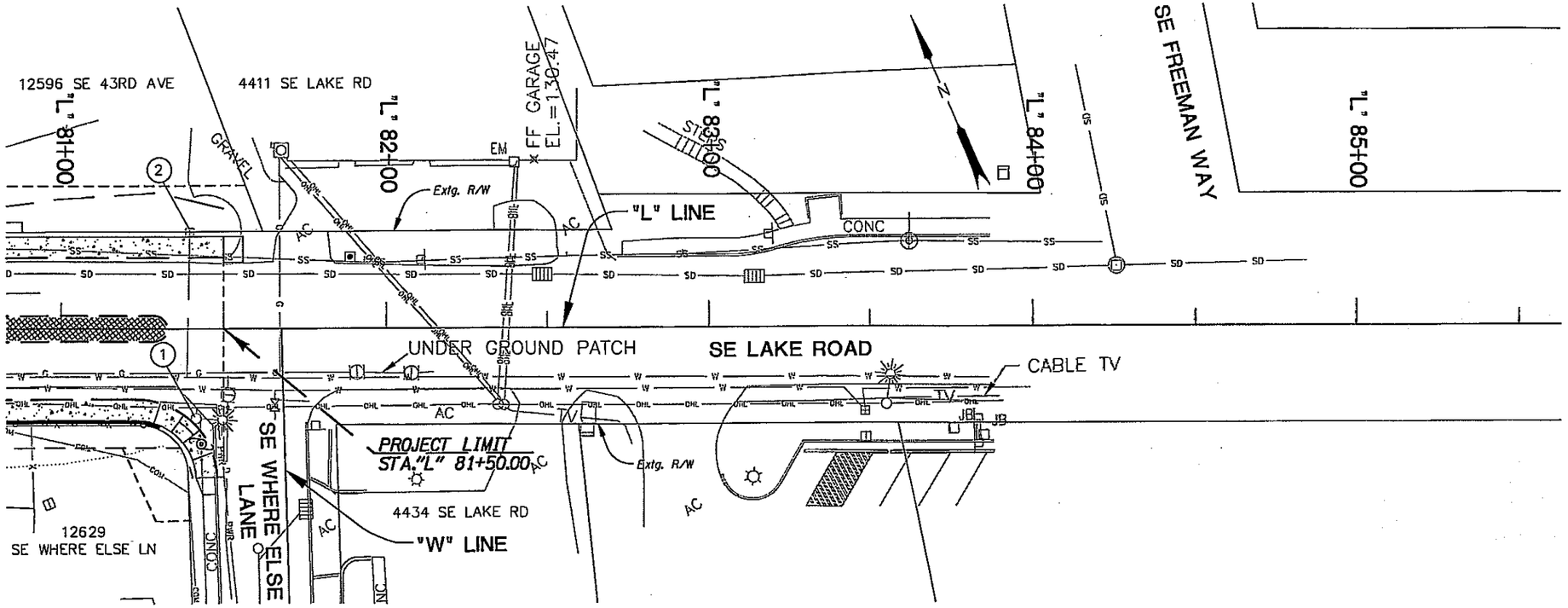
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinasa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA 81+00 TO 82+00

SHEET NO. 9

Sec. 6, T. 2 S, R. 2 E, W.M.



(1) *Relocate existing utility pole (by others)*

(2) *1" water service connections*

LEGEND

Landscoped median island

MILWAUKIE
Dogwood City of the West

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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

DRAINAGE AND UTILITIES
STA 81+00 TO 82+00

SHEET NO. 9A

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"L" LINE

134
130
126
122
118

81+50.00
127.57
PROJECT LIMIT
STA."L" 81+50.00

Profile grade @ ℄
0.5%
25"
Existing ground @ ℄
Subgrade
Extg. storm sewer
Extg. sanitary sewer
Exc. 184 C.Y.
Emb. 0 C.Y.

Sta. "L" 82+48.48
Extg. Manhole
IE In 122.30 SE
IE Out 122.10 NW

Sta. "L" 83+14.14
Extg. Manhole
IE In 124.80 E
IE Out 124.80 NW

81+00 82+00 83+00 84+00

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
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OREGON
DARRIN B. STAIRS
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otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "L" 81+00 TO "L" 82+00

SHEET NO. 9B

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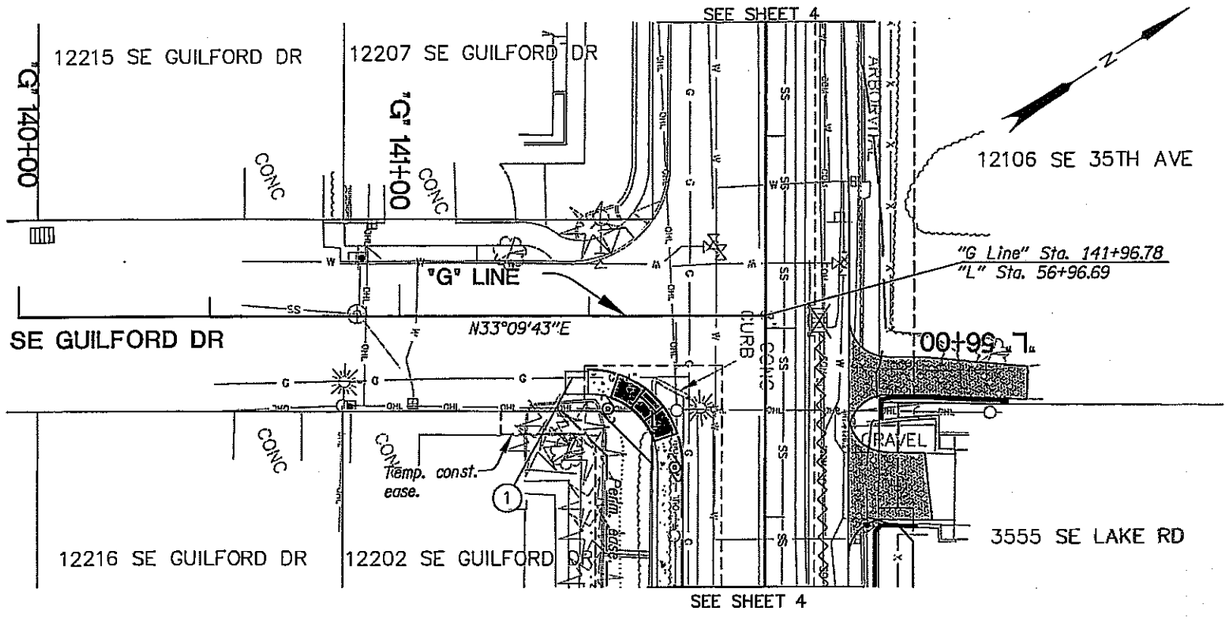

① *Const. sidewalk ramp and landing (Option F)*

"G" LINE

104
100
96
92
88

Existing Ground @ ℄

140+00 141+00 142+00

REGISTERED PROFESSIONAL ENGINEER
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DARRIN B. STAIRS
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MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SW GUILFORD DR.

SHEET NO. 10

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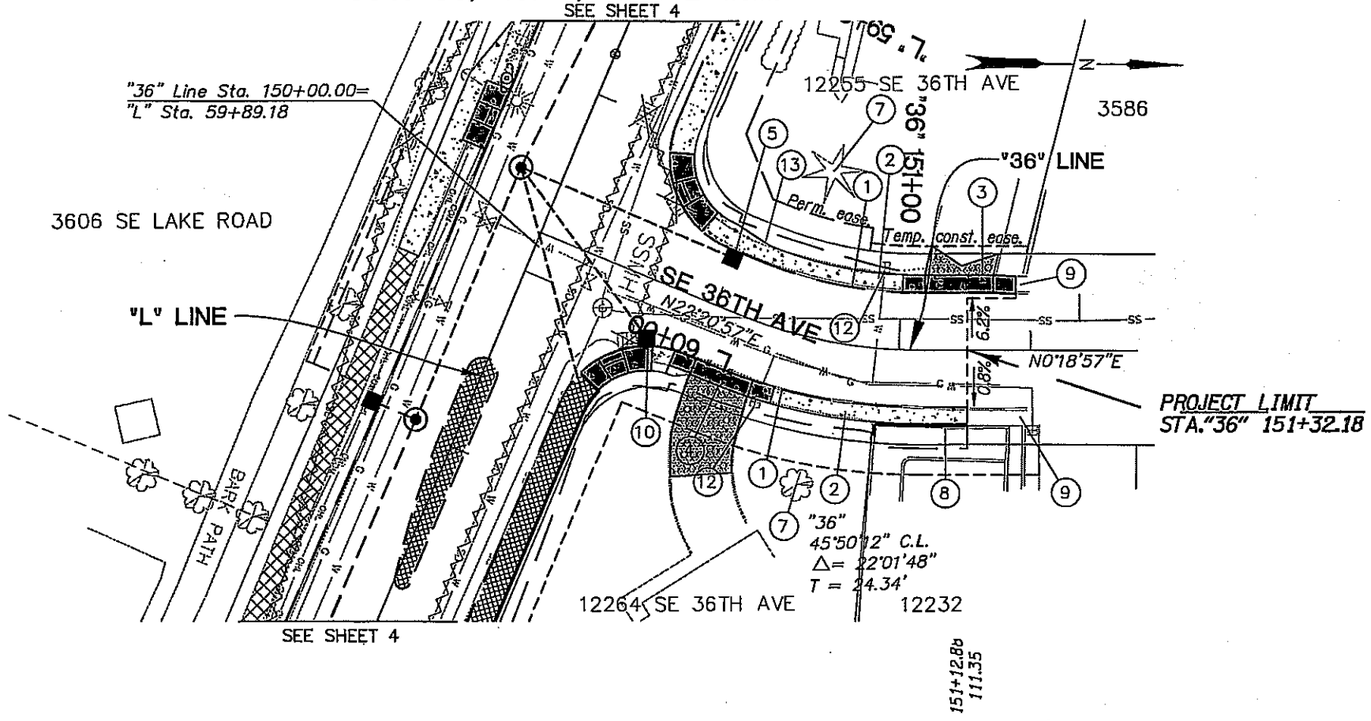
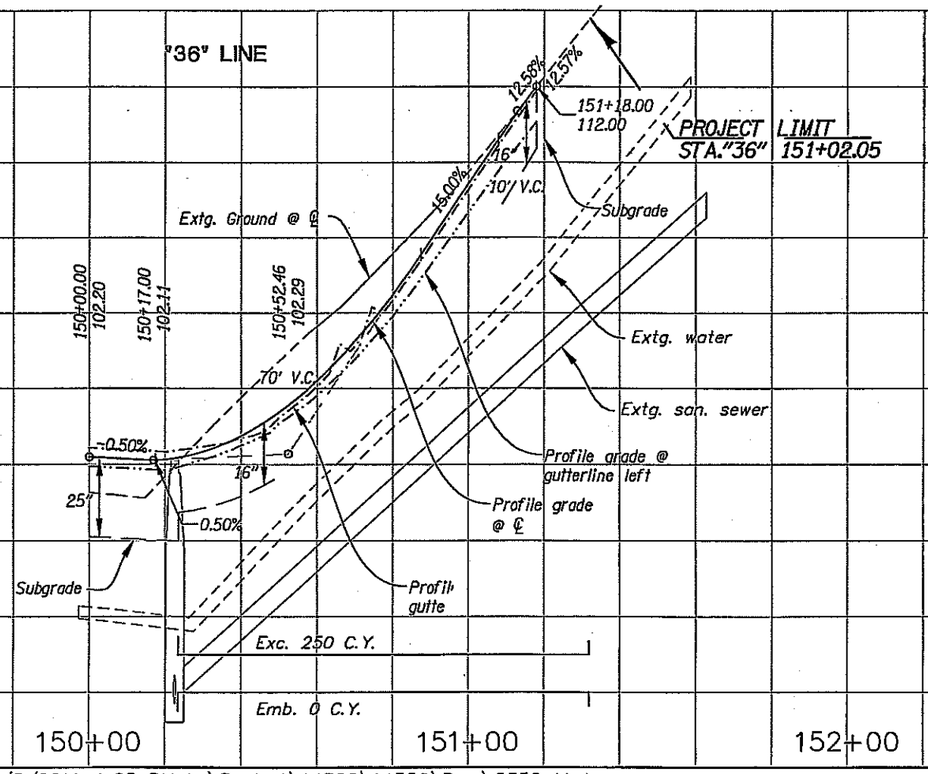


1. Const. std. curb
2. Const. conc. sidewalk
3. Sta "36" 151+16.0, w=18'
   Const. P.C. conc. dwy. (option N)
   (For details, see sheet 2B–8)
4. Sta "36" 150+58.41, w=16'
   Const. P.C. conc. dwy. (option N)
   (For details, see sheet 2B–8)
5. Sta "36" 150+49.55, 15' Lt.
   Const. G–2 catchbasin
   F.L. 98.22
   (See City of Milwaukie drg. no. 600)
6. Not used
7. Protect tree. Contact arborist when constructing near tree – 2 ea.
8. Sta "36" 150+94.72 to 151+29.54
   Remove and reconstruct modular block wall – 39'
9. Match existing sidewalk
10. Sta. "36" 150+36.92, 16.8' Rt.
    Const. G–2 catchbasin
    I.E. 97.69
11. Not used
12. Adjust box – 2
13. See sht. 4, note 6



MILWAUKIE Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 51051PE OREGON DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SE 36TH AVE

SHEET NO. 11

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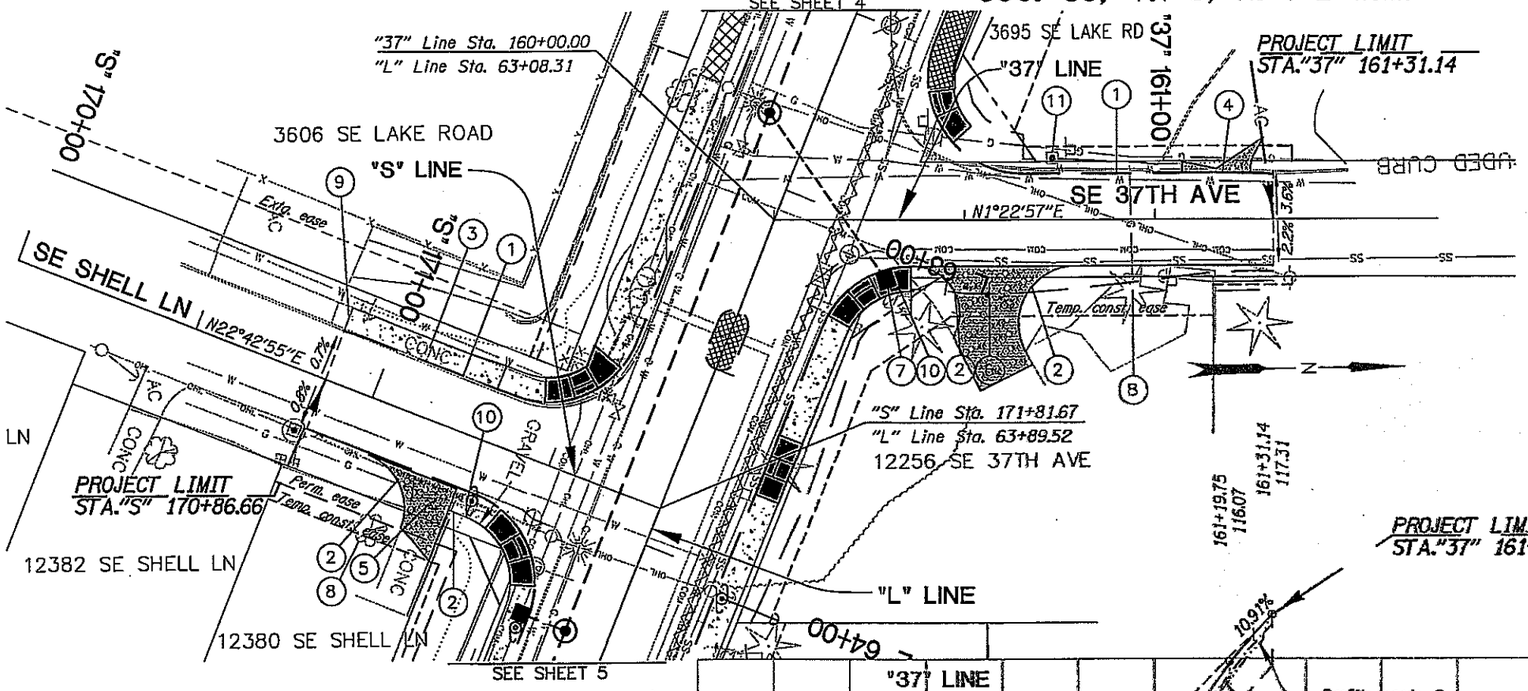

1. Const. std. curb
2. Proposed edge of pavement
3. Const. P.C. conc. sidewalk
4. Sta "37" 161+16.14, w=18'
   Const. dwy. approach
   (For details, see sheet 2B-8)
5. Sta "S" 171+24.33, w=33'
   Const. dwy. approach
   (For details, see sheet 2B-9)
6. Sta. "37" 160+57.79, w=15'
   Const. dwy. approach
   (For details, see sheet 2B-8)
7. Sta. "37" 160+28.30
   Const. curb inlet
   I.E. 102.62
8. Protect tree. Contact arborist when constructing near tree
9. Match existing sidewalk
10. Const. sidewalk ramp and landing (Option F) - 2 (See drg. no. RD756)
11. Remove and reinstall mailbox

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

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51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SHELL LANE/SE 37TH AVE

SHEET NO. 12

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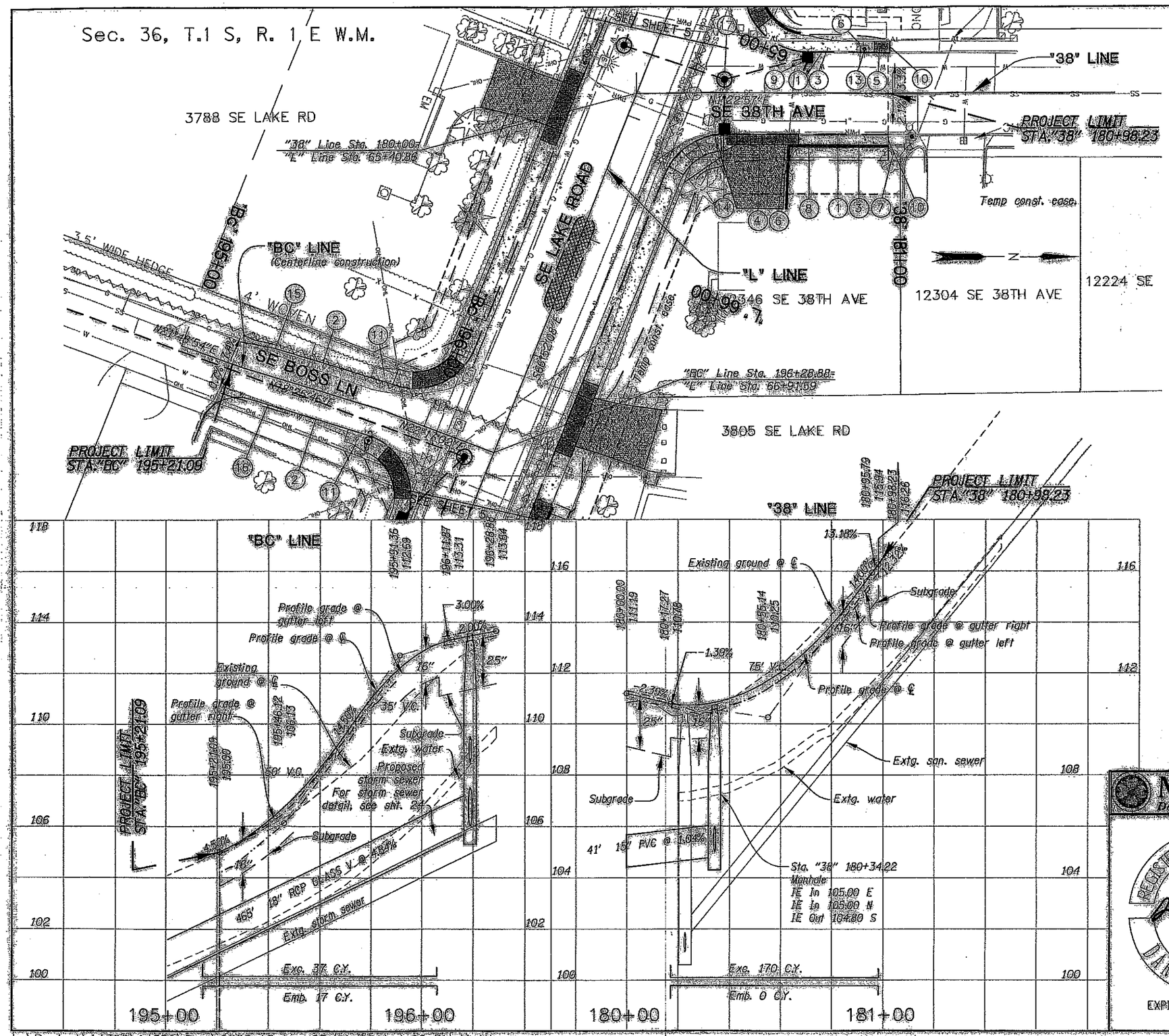

1. Const. std. curb
2. Proposed edge of pavement
3. Const. conc. sidewalk
4. Sta "38" 180+48.2, w=18'
   Const. P.C. conc. dwy. (option N)
   (for details, see sheet 2B-9)
5. Const. P.C. conc. dwy. wing (option N)
6. Const. 1" water service connections - 2
7. Protect tree. Contact arborist when constructing near tree
8. Sta "38" 180+59.11, 31.47' Rt. to
   Sta "38" 181+07.21, 20.38 Rt.
   Remove and reconstruct exist. rock wall - 59'
9. Sta "38" 180+66.96, 16' Lt.
   Const. G-2 catchbasin
   Ie. 105.69
10. Match existing sidewalk
11. Const. sidewalk ramp and landing (Option F) - 2
    (See drg. no. RD756)
12. Relocate communications riser (by others)
13. Remove and reinstall mailbox
14. Sta "38" 180+34.22, 16' Lt.
    Const. G-2 catch basin
    I.e. 105.72
15. Taper at 1:10 to match existing
16. Proposed edge of pavement
17. Sta "38" 180+34.22, 5.2' Lt.
    Const. manhole, rim elev. = 110.73
    Inst. 12" storm sewer pipe, 5' depth - 34'
    Inst. 12" storm sewer pipe, 5' depth - 21'

MILWAUKIE
Progressive City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
5105PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
BOSS LANE/SE 38TH AVE

SHEET NO. 13

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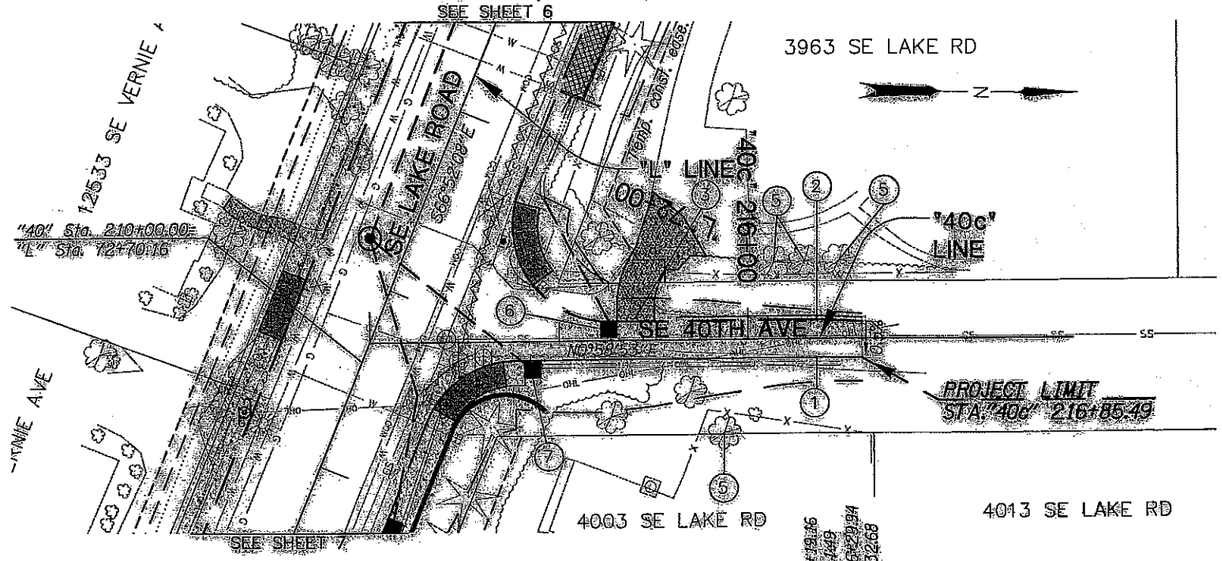
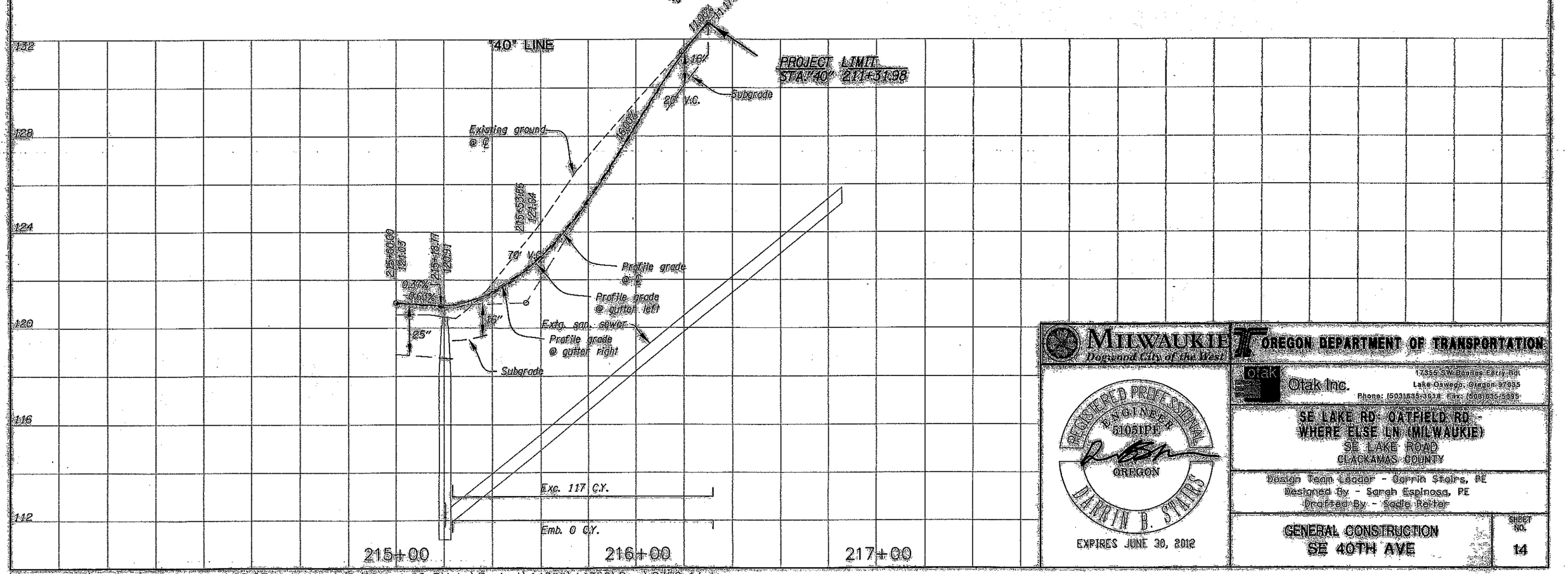


1. Proposed edge of pavement
2. Const. drainage curb
3. Sta "40" 210+72.12, w=10'
   Const. dwy. approach
   (for details, see sheet 2B-9)
4. Not used
5. Protect tree. Contact arborist when constructing near tree
6. Sta "40" 210+64.99, 10' Lt.
   Const. C-2 catchbasin
   I.E. 120.10
7. Sta "40" 210+45.07, 0.5' Rt.
   Const. ditch inlet
   I.E. 116.50



MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD- OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SE 40TH AVE

SHEET NO. 14

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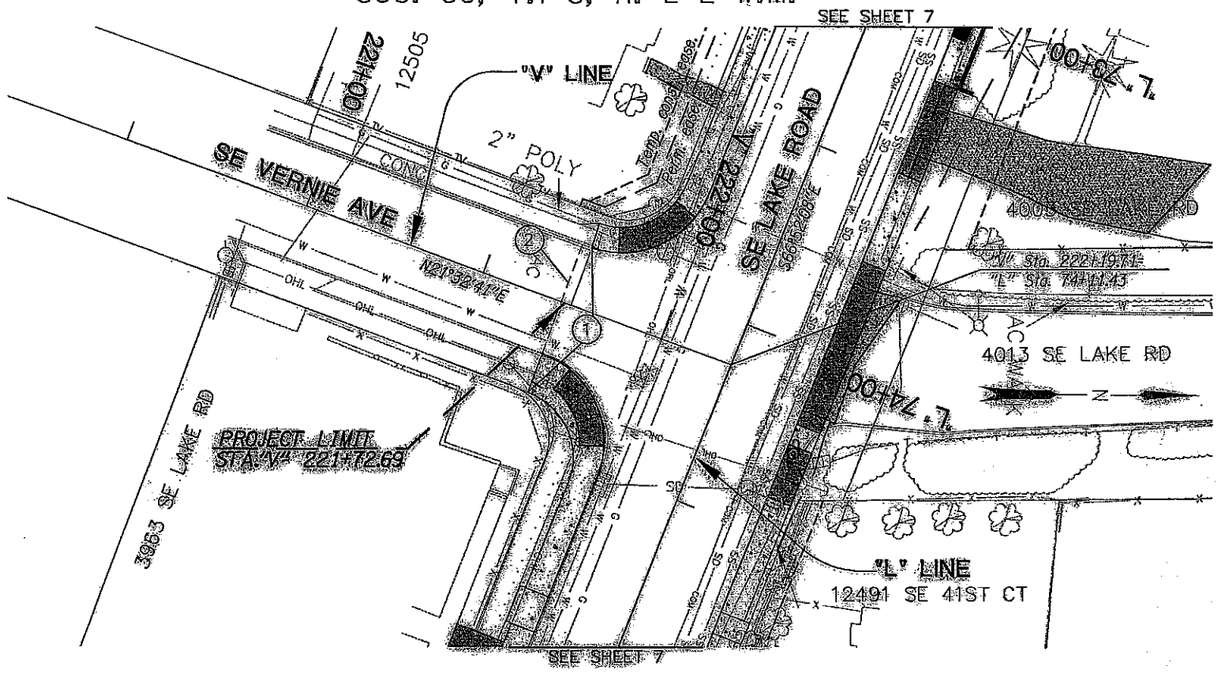
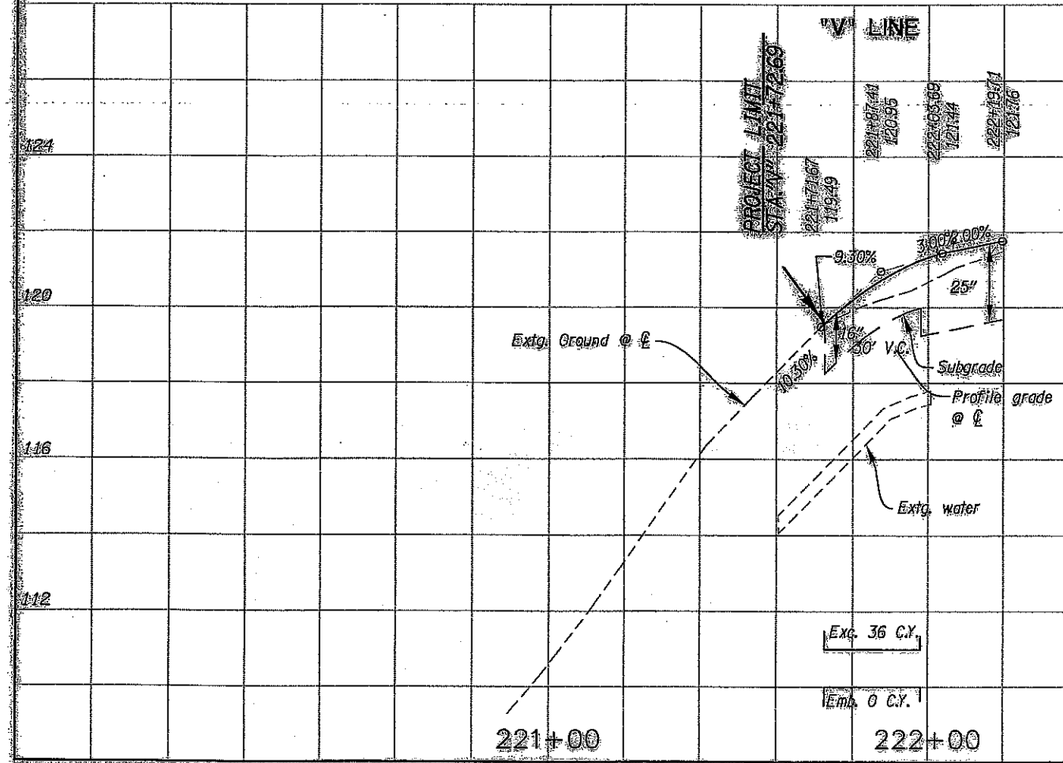


① Match extg. sidewalk

② Limits of full depth reconstruction



MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
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OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SE VERNIE AVE

SHEET NO. 15

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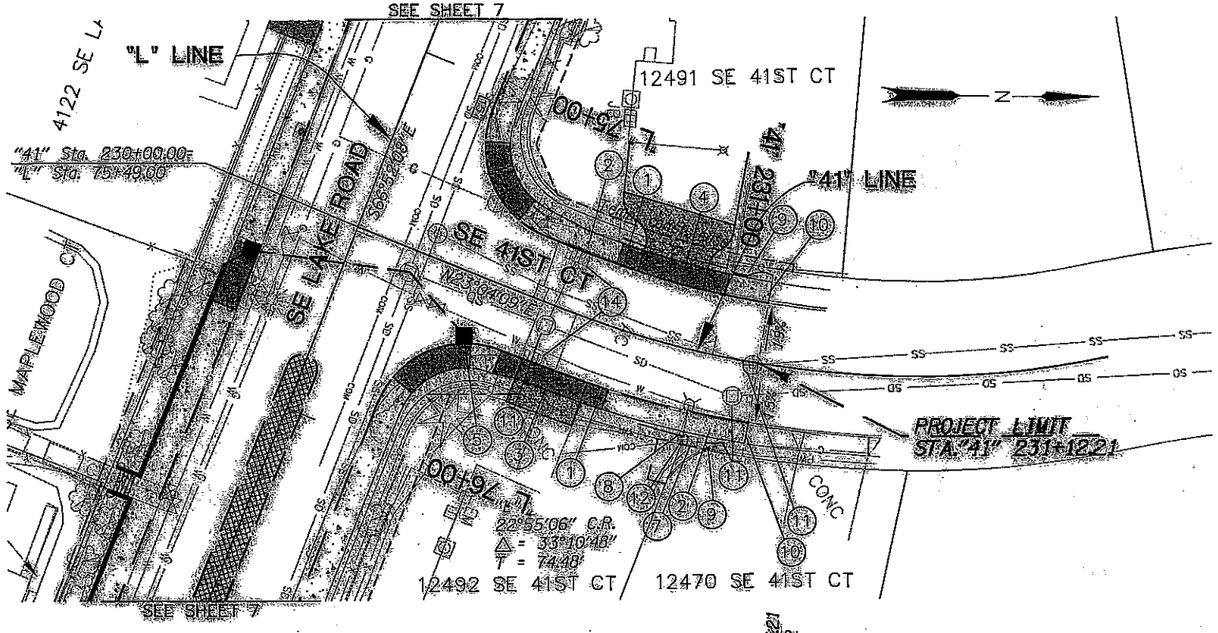

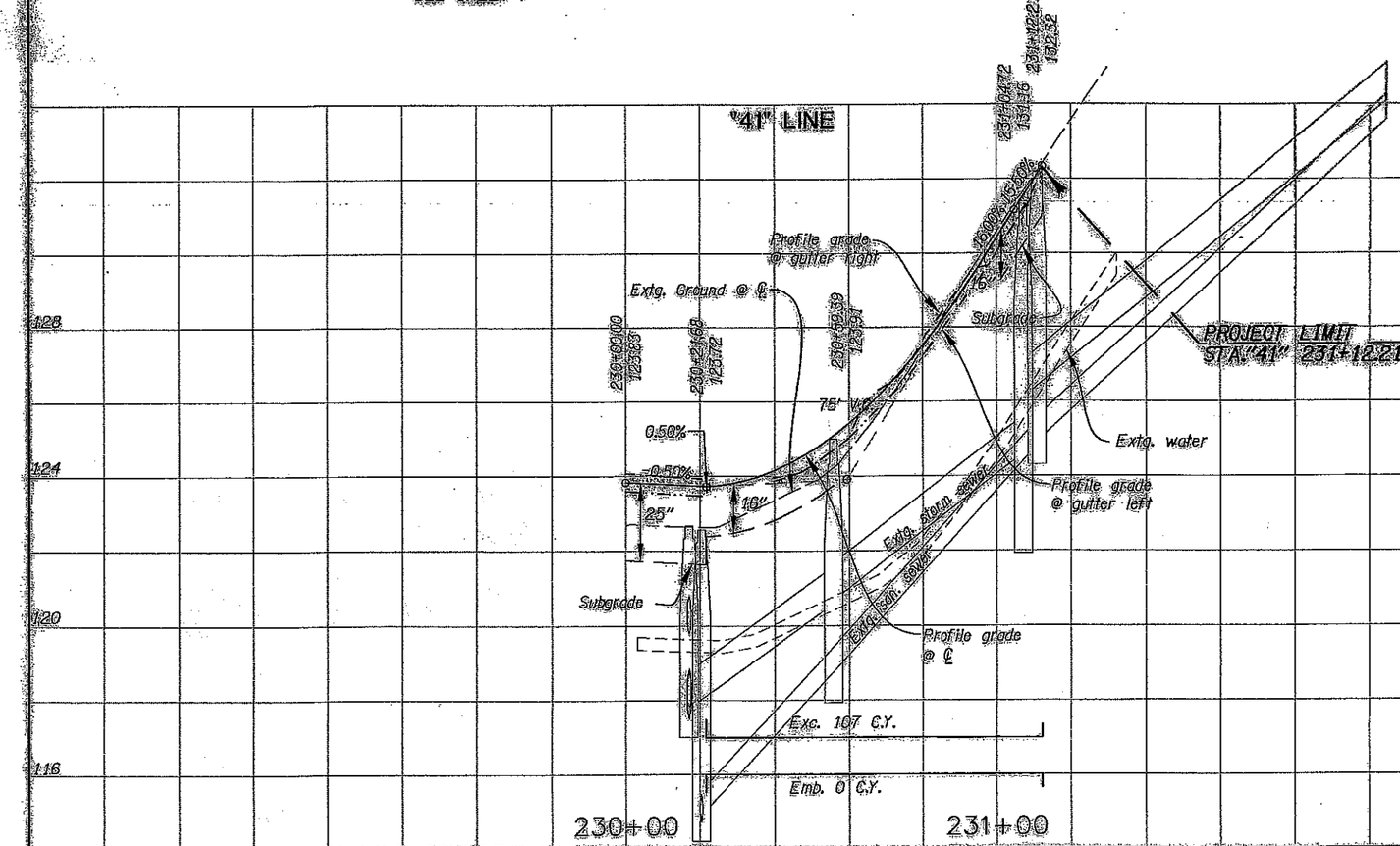

1. Const. std. curb
2. Const. conc. sidewalk
3. Sta. "41" 230+62.12, w=18'
   Const. P.C. conc. dwy. (Option N)
   (For details, see sht. 2B-9)
4. Sta. "41" 230+83.76, w=18'
   Const. P.C. conc. dwy. (Option N)
   (For details, see sht. 2B-9)
5. Sta. "41" 230+37.34, 17.8' Rt.
   Const. G-2 catchbasin
   I.E. 120.27
6. Not used
7. Minor adjust communications riser (By others)
8. Relocate exist. utility pole (By others)
9. Protect existing wall
10. Match existing sidewalk
11. Minor adjust manhole - 3
12. Adjust box
13. Not used
14. Adjust inlet - 2

MILWAUKIE
Dogwood City of the West

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51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3818 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sargh Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SE 41st COURT

SHEET NO. 16

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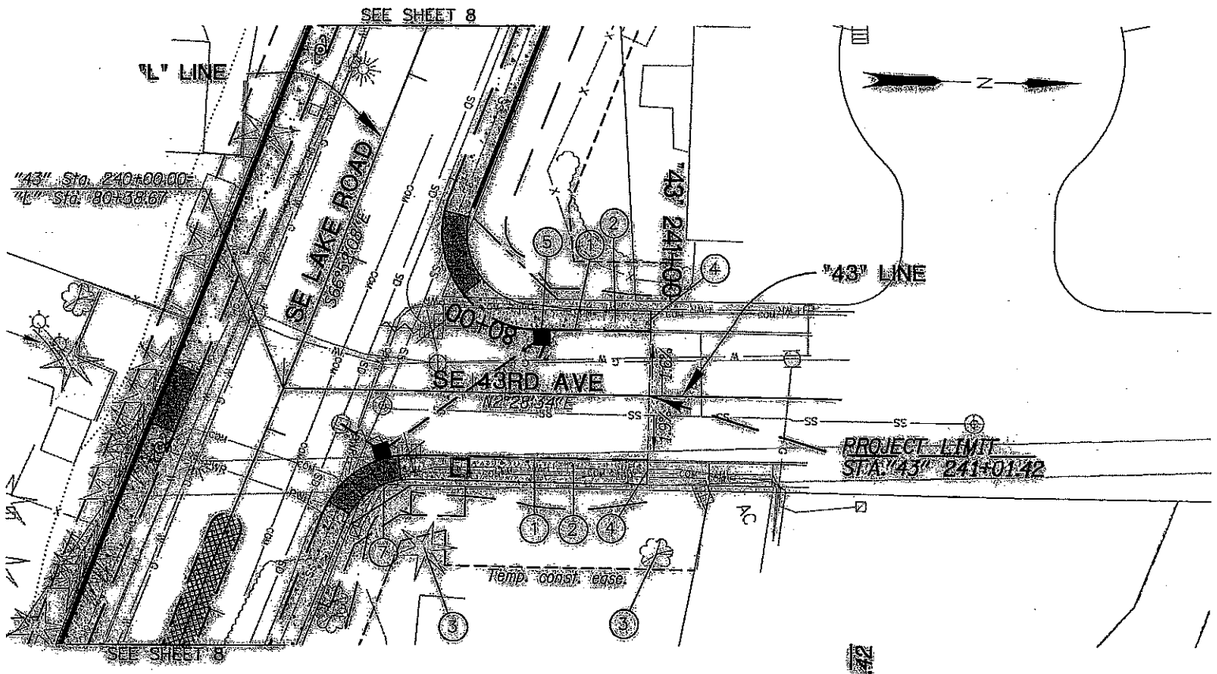
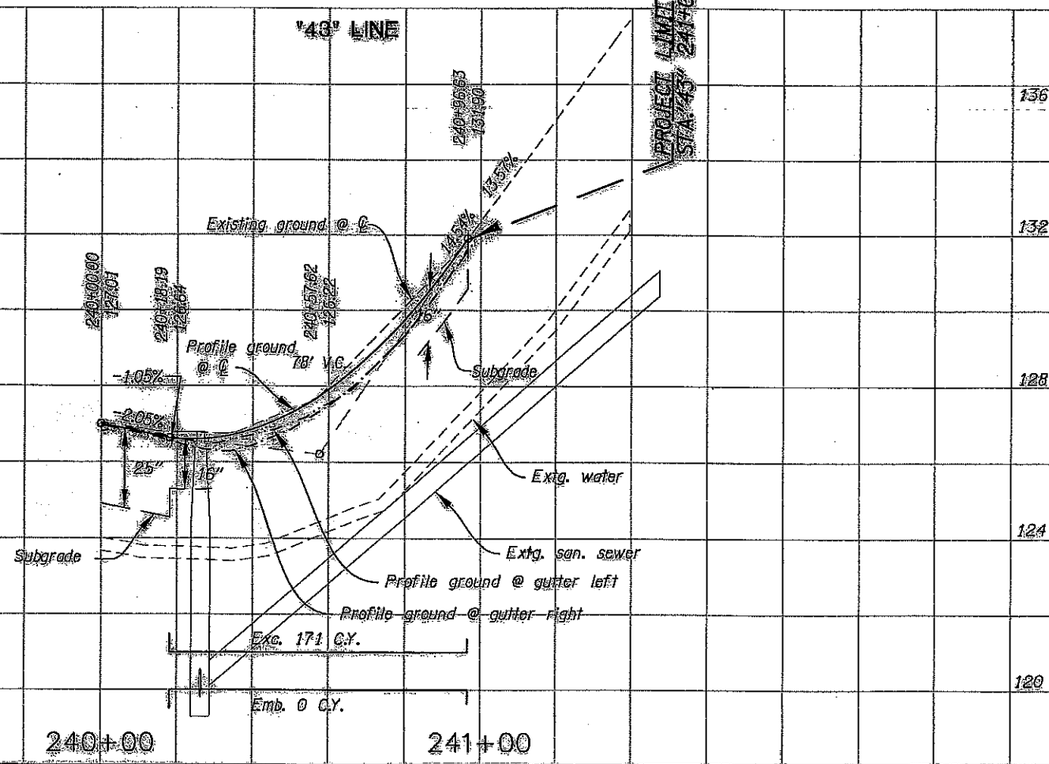


1. Const. std. curb
2. Const. conc. sidewalk
3. Protect tree. Contact arborist when construsting near tree – 2
4. Match existing sidewalk
5. Stg "43" 240+68.06, 17' Lt.
   Const. C-2 catchbasin
   F.L. 123.79
6. Not used
7. Stg "43" 240+26.95, 18.1' Rt.
   Const. C-2 flow through catchbasin
   Inst. 12" storm sewer pipe, 5' depth – 54'
   F.L. 121.74
   (See City of Milwaukie Dwg. No. 603)



MILWAUKIE
Pleasant City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

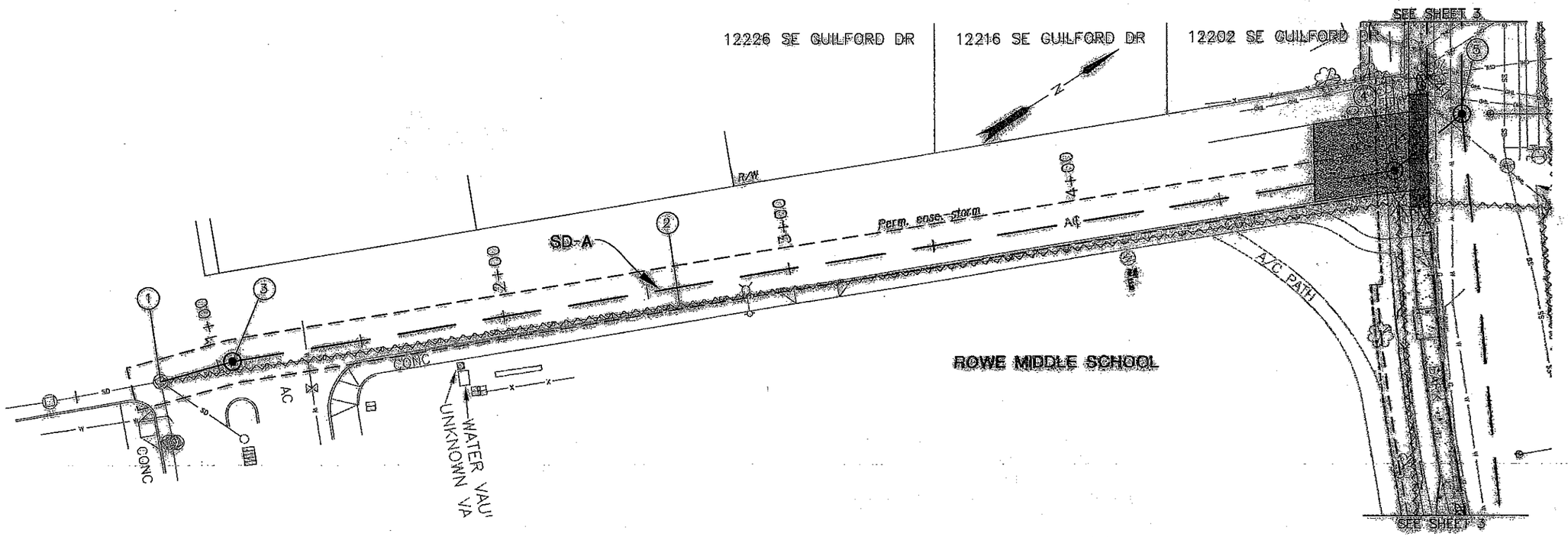
SE LAKE RD, OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
SE 43rd AVE

SHEET NO. 17

Sec. 36, T.1 S, R. 1 E W.M.



1. Sta. "SD-A" 0+79.39
   Connect to existing manhole
   Install 24" storm sewer pipe, 10' depth - 26'
2. Plug and abandon pipe in place
3. Sta. "SD-A" 1+05.12
   Const. manhole, Rim Elev. = 87.80
   Install 18" CPP Class V storm sewer pipe, 10' depth - 405'
4. Sta. "SD-A" 5+10.61
   Const. manhole, Rim Elev. = 99.42
   Install 18" storm sewer pipe, 10' depth - 31'
   Connect exta. 12" CPP storm sewer pipe
5. See note 6, sheet 3A

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51081PE
OREGON
DARRIN R. STAIRS
EXPIRES JUNE 30, 2012

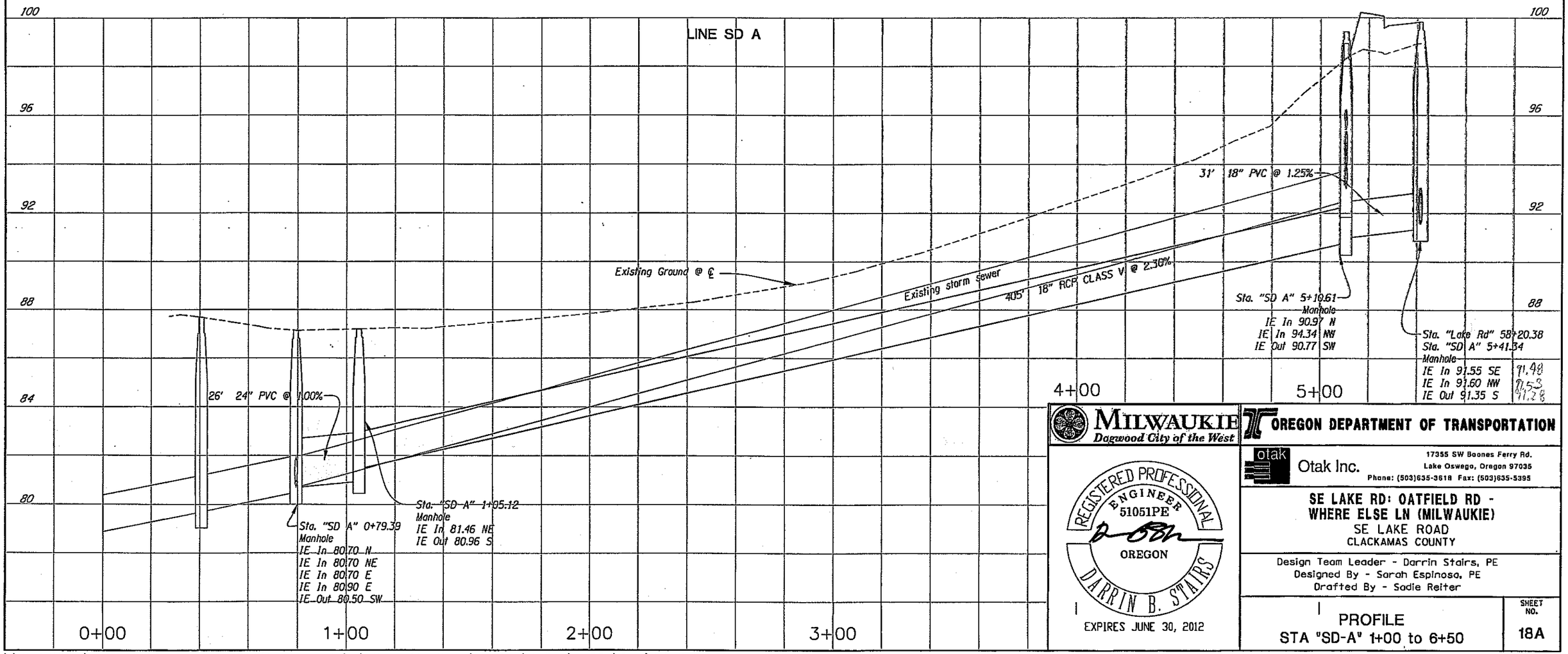
Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD - OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinoza, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STORM LINE A
STA "SD-A" 1+00 to 6+50

SHEET NO. 18



MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
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Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

PROFILE
STA "SD-A" 1+00 to 6+50

SHEET NO. 18A

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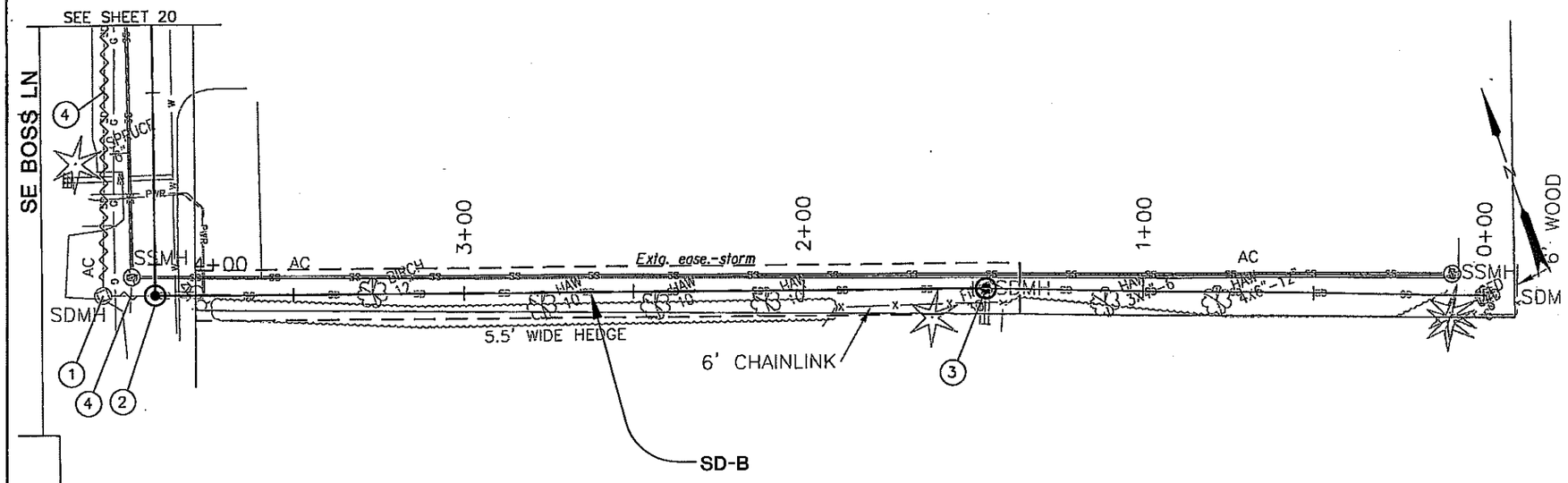
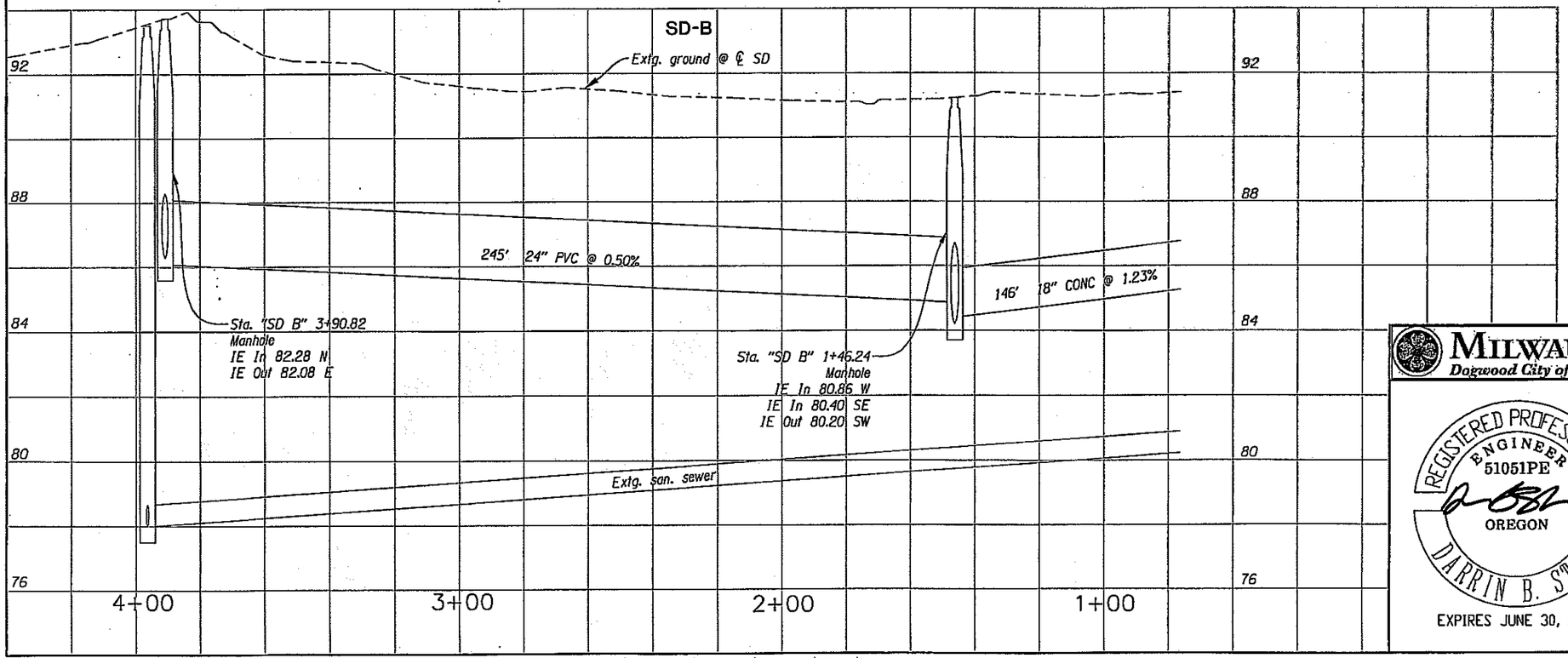
Sec. 31, T.1 S, R. 2 E W.M.





1. Abandon existing manhole
2. Sta. "SD-B" 3+90.82
   Const. manhole, Rim elev.= 89.7'
   Inst. 24" storm sew. pipe 10' depth - 104'
3. Sta. "SD-B" 1+46.24
   Remove existing manhole
   Remove existing storm sewer pipe, - 259.93'
   Const. manhole, Rim elev.= 87.23
   Inst. 24" storm sew. pipe 10' depth - 245'
4. Plug and abandon pipe in place

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

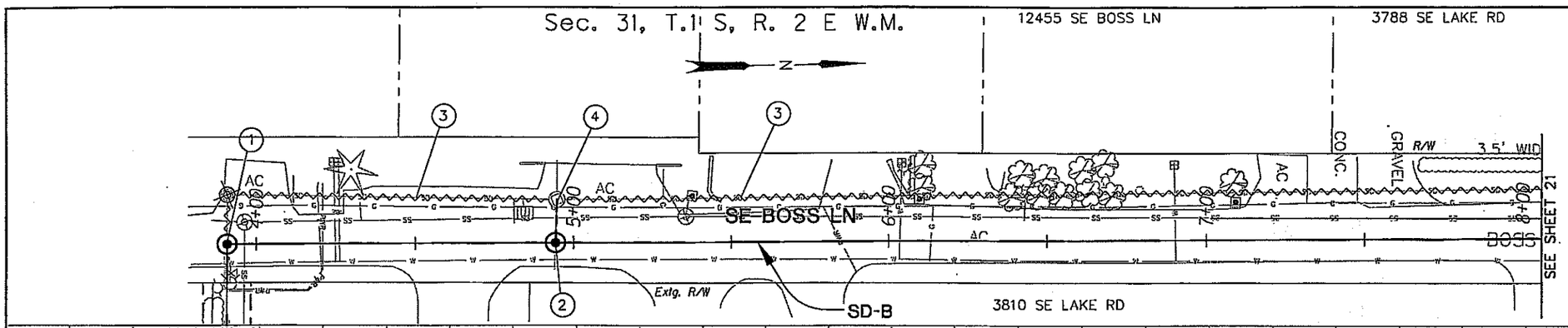
Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

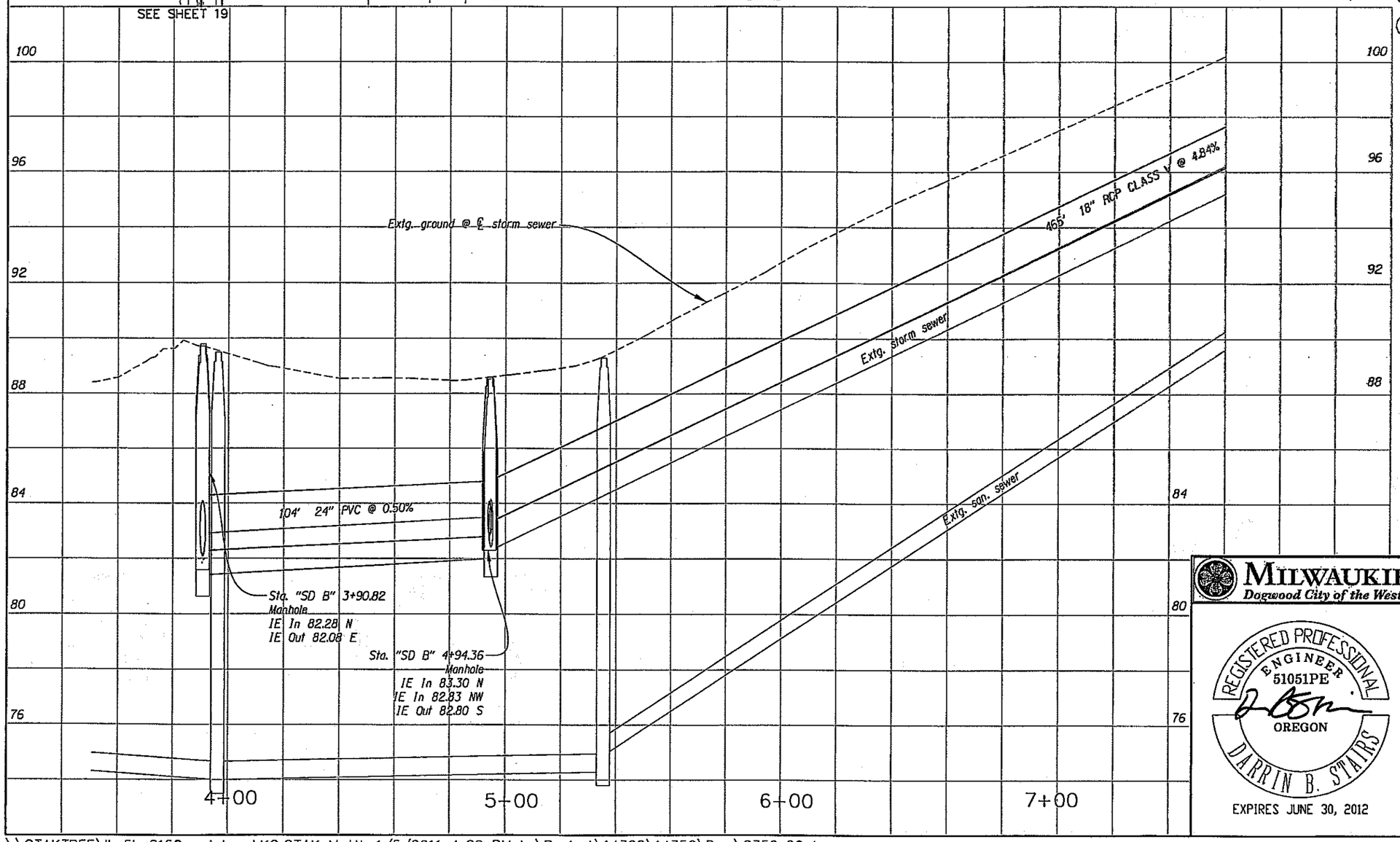
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STORM LINE B
STA "SD-B" 1+00 to 3+80

SHEET NO. 19



1. See sht. 19, note 2
2. Sta. "SD-B" 4+94.36
   Const. manhole, over extg. sewer, Rim elev. = 88.6'
   Inst. 18" RCP Class V storm
   sewer pipe, 10' depth - 465'
   Remove existing storm sewer pipe - 13'
   Inst. 15" storm sewer pipe, 10' depth - 13'
3. Plug and abandon pipe in place.
4. Preserve and protect extg. manhole.



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OREGON
DARRIN B. STAIRS
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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

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SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Dorrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA "SD-B" 4+00 to 7+60

SHEET NO. 20

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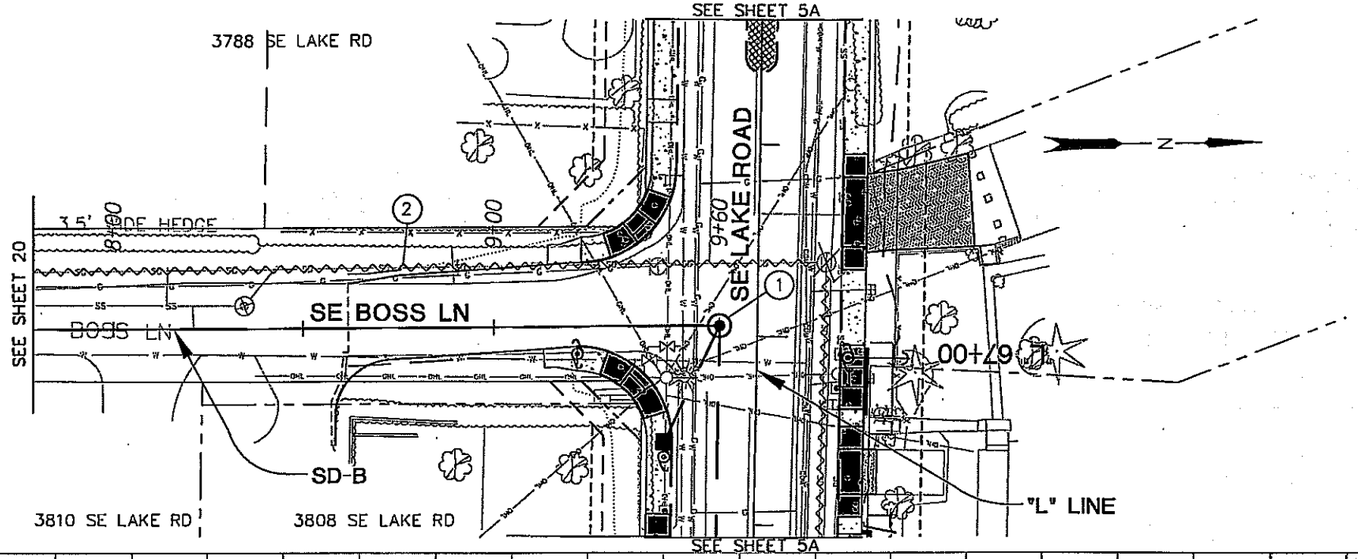
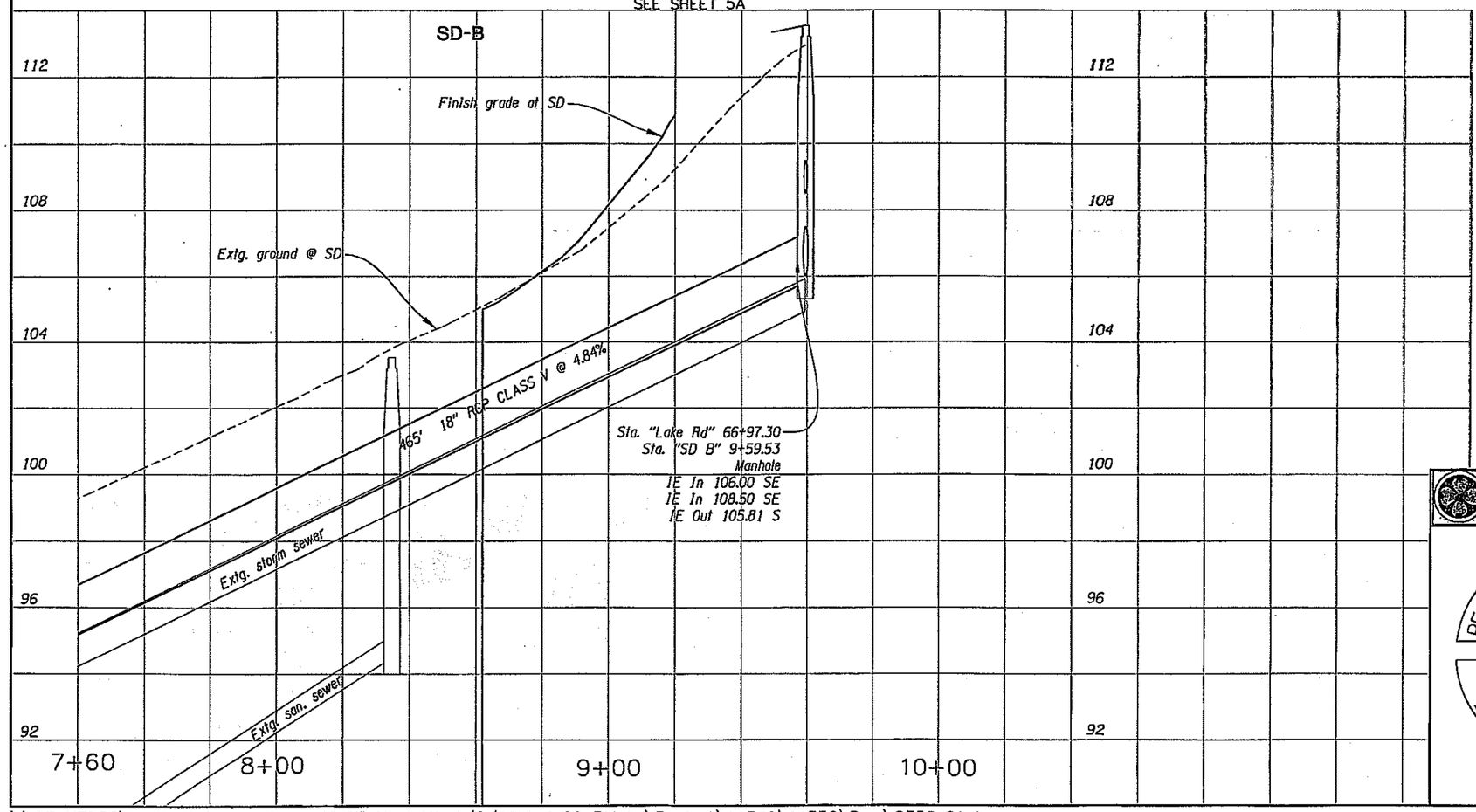
Sec. 31, T.1 S, R. 2 E W.M.



(1) *See sheet 5A, note 5*

(2) *Plug and abandon pipe in place*



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51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

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SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

GENERAL CONSTRUCTION
STA "SD-B" 7+60 to 9+13

SHEET NO. 21

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Sec. 36, T.1 S, R. 1 E W.M.

GENERAL NOTES:

The construction, adjustment, maintenance, and upgrading of these Erosion Control measures is the responsibility of the contractor for the duration of the project.

Erosion Control measures shown on this plan are for anticipated site conditions. Adjust or upgrade these measures for unexpected storm events to ensure that sediment and sediment-laden water does not leave the site.

Develop a revised plan of the Erosion Contral measures shown as required by Section 00280, Oregon Standard Specifications for Construction. Implement this plan for all clearing and grading activities and in segments applicable to each staging phase. Construct in such a manner so as to ensure that sediment and sediment-laden water does not enter the roadway or drainage system, or violate applicable water standards.

Install measures within the right-of-way unless directed otherwise.

Install stabilized construction entrances at the beginning of construction and maintain for the duration of the project. Additional measures may be required to insure that all paved areas are kept clean.

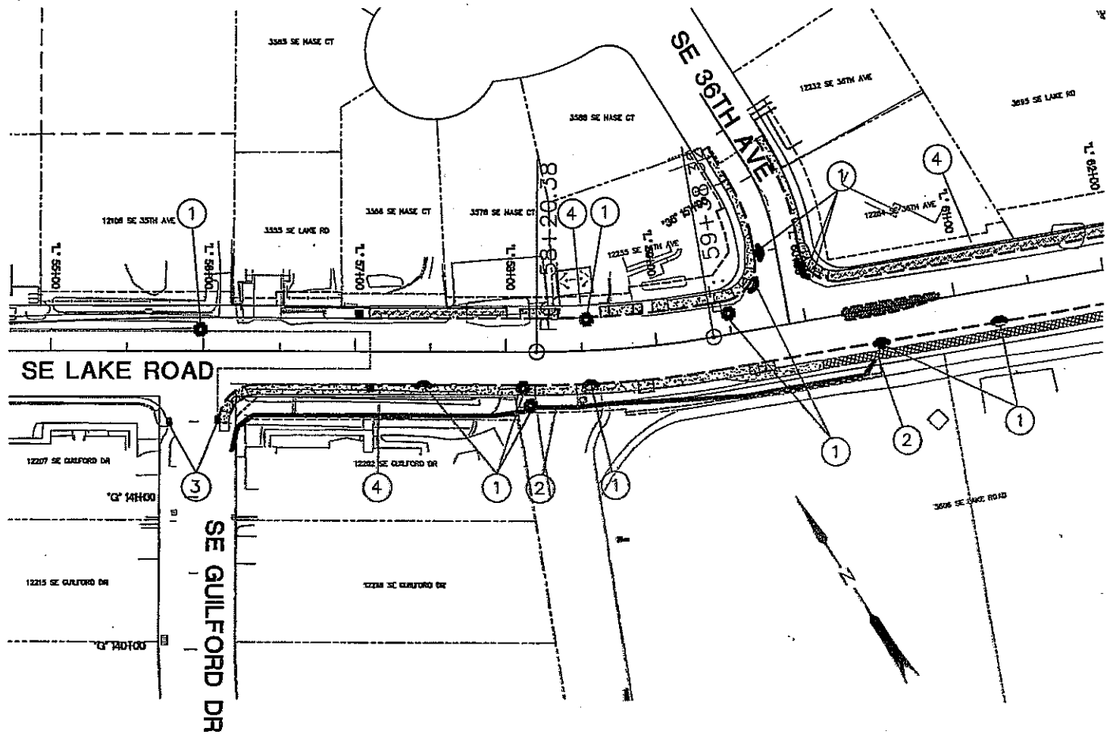
Construct compost filter sock 2 feet downslope from the toe of fill slopes where sediment-laden water has a potential of entering waterways or leaving the R/W.

Protect all inlets during surface grinding, paving, and earthwork operations to prevent pollutants from entering storm water systems.

Protect all catch basins, curb inlets, ditch inlets, and area drains with compost filter sock (Inlet Protection Type 7).

CITY OF MILWAUKIE
EROSION PREVENTION AND SEDIMENT CONTROL (ECS) NOTES:

1. All erosion prevention measures shall be in place, functional and approved prior to commencement of construction activities. Contractor shall maintain all soil erosion and site drainage facilities throughout construction.
2. After site restoration is complete and when approved by the engineer, all temporary erosion control measures shall be removed.
3. Dumping or the disposal of spoil materials into any stream, corridors, wetlands, surface waters or any public or private property not specified for said purpose is prohibited.
4. Pumping of sediment-laden water from trenches or other excavations into any surface water, piped system or on any public or private property not specified for said purpose is prohibited.
5. Sediment prevention must be installed and maintained on all down gradient sides of the construction site at all times during construction.
6. All active catch basins must have sediment prevention installed and maintained at all times during construction.
7. All saw cutting slurry / debris must be vacuumed / removed from all impervious surfaces.
8. Water tight trucks must be used to transport saturated soils from the construction site. An approved equivalent is to drain the soil on-site at a designated location using appropriate bmp's; soil must be drained sufficiently for minimal spillage.
9. Temporary stabilization or covering of soil stockpiles must occur at the end of each work day or other approved bmp's must be implemented to prevent turbid discharges to surface waters.
10. Develop and maintain onsite a written spill prevention and response procedure.
11. Any use of toxic or other hazardous materials must include proper storage, application and disposal.
12. Sediment must not be washed into storm sewers, drainage ways or water bodies. Dry sweeping must be used to clean up released sediments.
13. An area must be provided for the washing out of concrete trucks in a location that does not provide run-off that can enter the storm system.
14. Sweepings from exposed aggregate concrete shall not be transferred to the storm system. Sweepings shall be picked up and disposed in the trash.
15. Avoid paving in wet weather when paving chemicals can run-off into the storm system.
16. Cover catch basins, manholes and other discharge points when applying seal coat, tack coat etc. To prevent introducing these materials to the storm system.
17. Tracking of dirt and debris onto streets is not allowed. All tracking and debris on streets surface must be removed at the end of each day or sooner if it can be spread by traffic or reach the public storm system.
18. Gravel or dirt curb jumps are not allowed (use wooden step style).
19. Gravel construction entrances must be installed at the start of the project to prevent tracking and for initial inspection approval.



STANDARD DRAWINGS

■	RD1000	Construction Entrance
□	RD1005	Check Dam
□	RD1010	Inlet Protection Type 1,2,3
□	RD1015	Inlet Protection Type 4
□	RD1020	Inlet Protection Type 5
□	RD1025	Sediment Barrier Typo 1
□	RD1030	Sediment Barrier Type 2,4
□	RD1035	Sediment Barrier Type 3
□	RD1040	Sediment Fence Supported/Unsupported
□	RD1045	Temporary Slope Drain
□	RD1050	Temporary Scour Basin
□	RD1055	Matting
□	RD1060	Tire Wash Type 1

1. Const. Inlet Protection (Type 7, Compost Filter Sock) (For details, see Sht. No. GA-6)
2. Install Sediment Barrier (Type 8 Compost Filter Sock) (For details, see Sht. Nos. GA-4 & GA-5)
3. Install Sediment Barrier at downstream end of curb return (Type 8 Compost Filter Sock)
4. Plant disturbed areas with permanent seed mix per special provisions, Section 1030.

LEGEND

- Sediment Barrier (Type 8)
- Inlet protection (Type 7)
- Sediment borrier (Type 8)

Graphic Symbols Are Approximate. Place Erosion Control Measures As Required Or Directed.

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

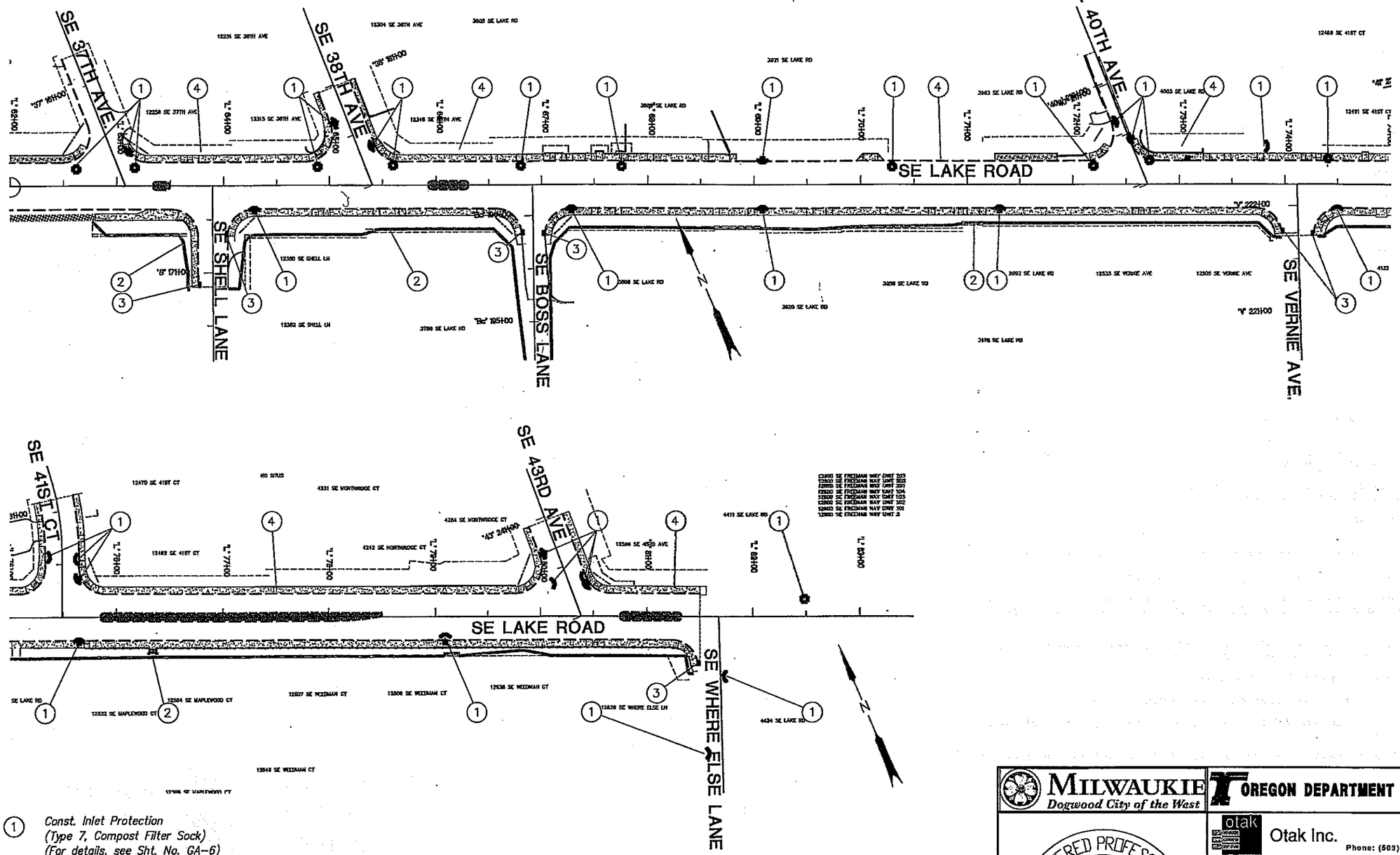
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

EROSION CONTROL
STA "L" 50+00 TO "L" 62+00

SHEET NO. GA

Sec. 36, T.1 S, R. 1 E W.M. & Sec. 31, T.1 S, R. 2 E W.M.



(1) *Const. Inlet Protection*
(Type 7, Compost Filter Sock)
(For details, see Sht. No. GA-6)

(2) *Install Sediment Barrier*
(Type 8 Compost Filter Sock)
(For details, see Sht., Nos. GA-4 & GA-5)

(3) *Install Sediment Barrier at downstream end of curb return or construction limits, as shown (Type 8 Compost Filter Sock)*

(4) *Plant disturbed areas with permanent seed mix per special provisions, Section 1030.*

LEGEND

Sediment barrier (Type 8)
Inlet protection (Type 7)
Sediment barrier (Type 8)

Graphic Symbols Are Approximate. Place Erosion Control Measures As Required Or Directed.

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OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

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Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

EROSION CONTROL
STA "L" 62+00 TO "L" 82+00

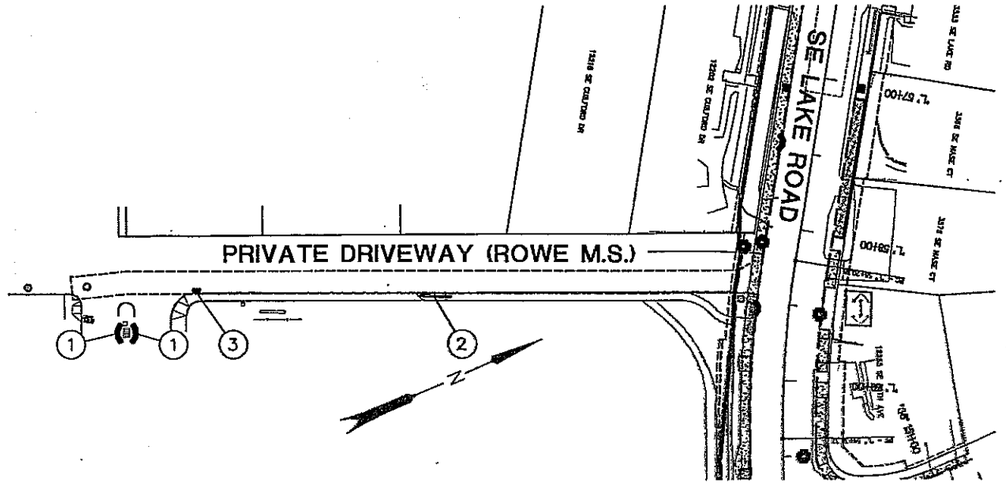
SHEET NO. GA-2

Sec. 36, T.1 S, R. 1 E W.M. & Sec. 31, T.1 S, R. 2 E W.M.

(1) *Const. Inlet Protection (Type 7, Compost Filter Sock) ((For details, see Sht. No. GA-5)*

(2) *Install Sediment Barrier (Type 8 Compost Filter Sock) (For details, see Sht. Nos. GA-3 & GA-4)*

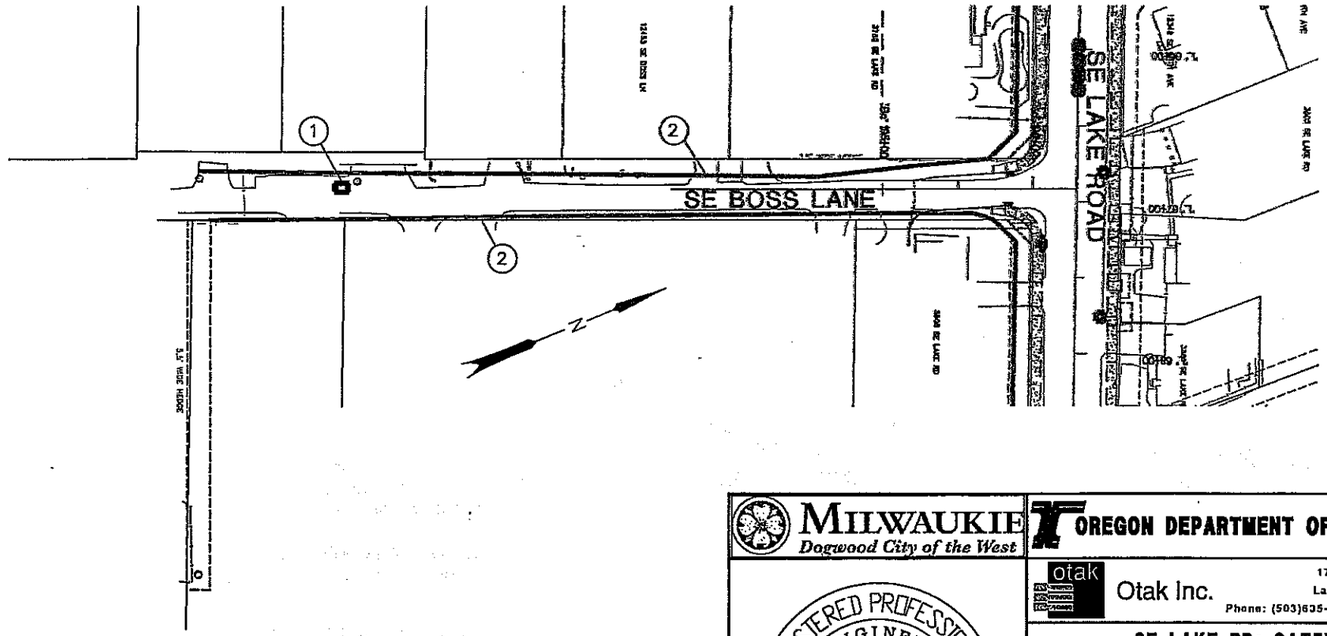
(3) *Install Sediment Barrier at downstream end of curb return or construction limits, as shown (Type 8 Compost Filter Sock)*



LEGEND

- *Sediment borrier (Type 8)*
- *Inlet protection (Type 7)*
- *Sediment barrier (Type 8)*

Graphic Symbols Are Approximate. Place Erosion Control Measures As Required Or Directed.



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REGISTERED PROFESSIONAL ENGINEER
61051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

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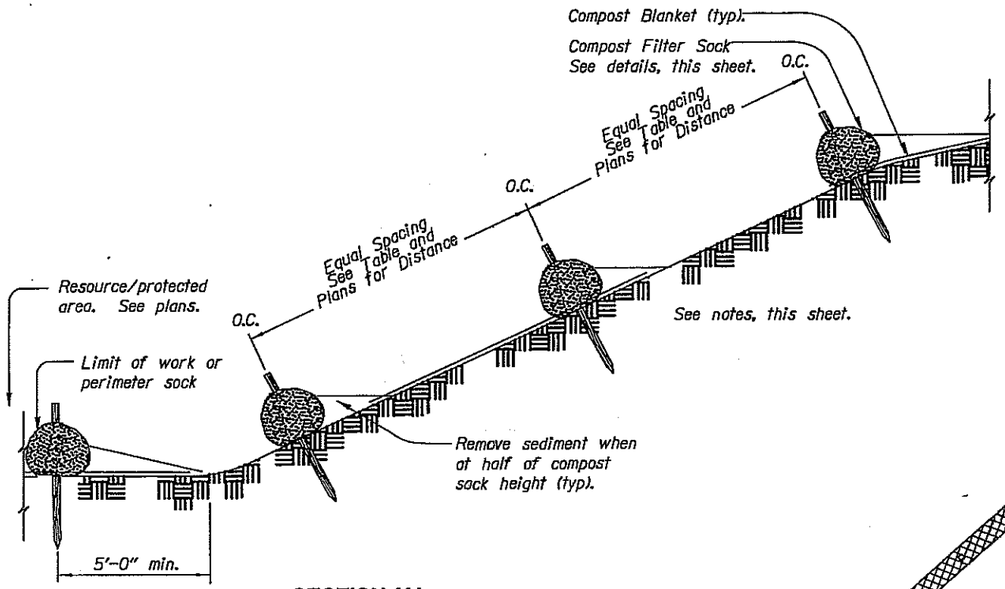
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

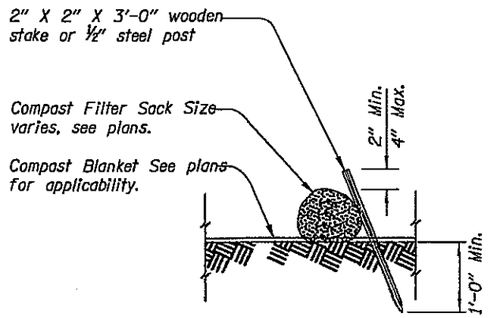
EROSION CONTROL
PRIVATE DRIVEWAY AND BOSS LN

SHEET NO. GA-3

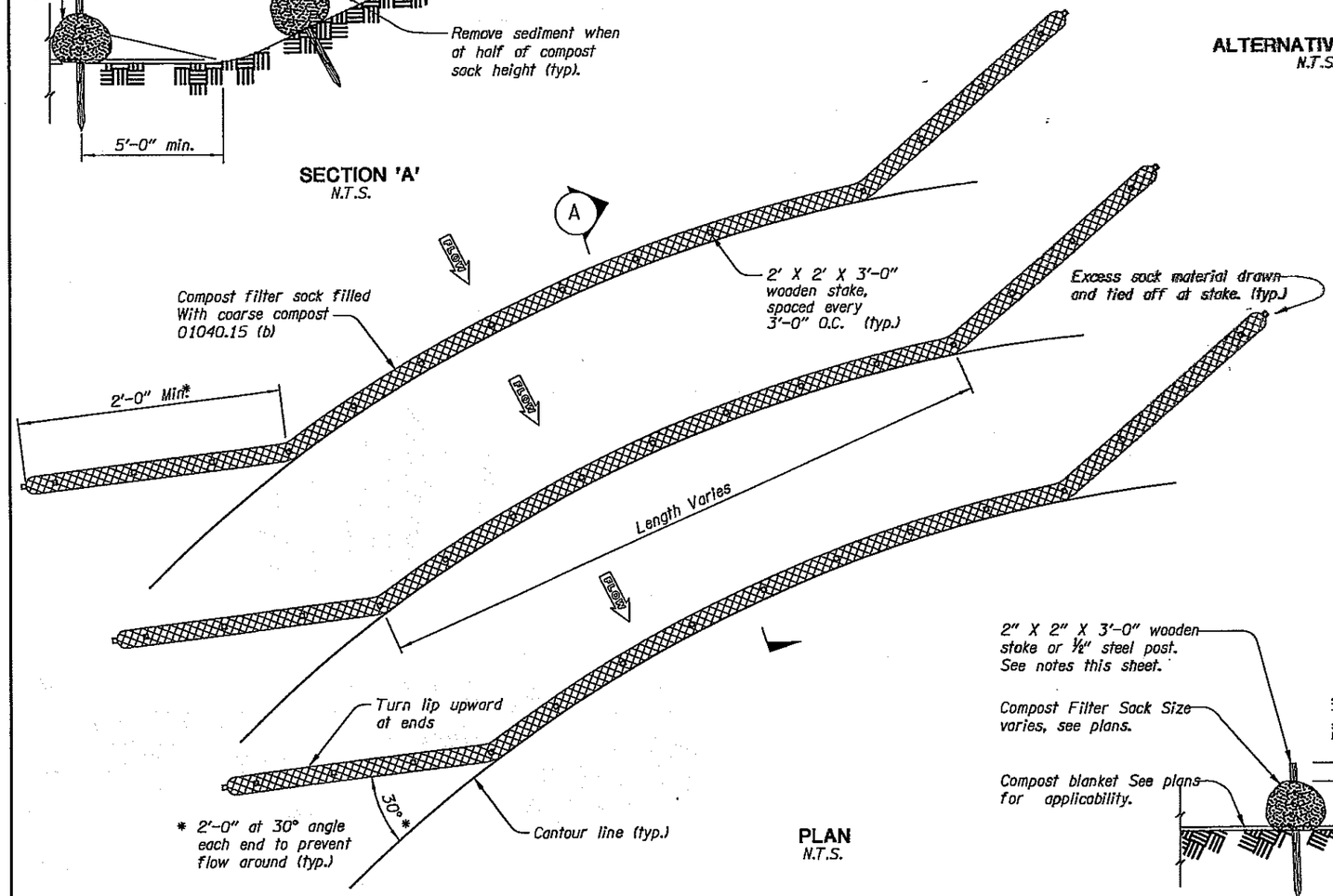
COMPOST FILTER SOCK



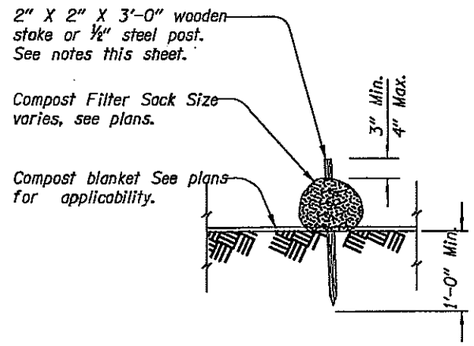
SECTION 'A'
N.T.S.



ALTERNATIVE 1 (Staking)
N.T.S.



PLAN
N.T.S.



ALTERNATIVE 2 (Staking)
N.T.S.

Compost Filter Sock General Notes

1. Filter socks can be placed at the top, on the face, and at the toe of slopes as sediment-trapping devices for sheet flow runoff and sediment per these notes and compost filter sock details, plans and specifications. See Special Provision 01040.15(b) for compost specifications.

2. Place filter socks on slopes along or on the ground contour. Filter socks applied at toe of a slope should be placed at minimum, 5 feet from toe to provide sediment storage. The maximum drainage area is ¼ acre per 100 LF of 12 inch diameter filter sock.

3. For ditch applications, maximum drainage area shall be 15 acres. At sites which outfall to high-quality or sediment-impaired streams, maximum drainage area shall be limited to 10 acres. Compost filter socks shall not be used in streams, wetlands, or other natural water resources unless directed by Agency. Compost filter socks shall not be used in ditches with continuous flows.

4. For ditch applications, minimum installed height of single sock nominally. Socks are placed perpendicular to flow of water. Filter socks shall continue up side slopes to top of bank or maximum 3 feet above installed height. Filter socks shall remain in place until all upstream areas are permanently stabilized and remain at Agency discretion.

5. Filter socks are typically supplied and installed in 8, 12, 18, or 24 inch diameters. Diameter tolerance is 2 inches, as filter socks tend to flatten out when placed

6. Steel posts may be used and shall be rolled from high carbon steel and have a minimum of 1.25 lb/ft. Posts shall be hot-dipped galvanized or painted with high-grade weather resistant brown or black steel paint. Steel posts shall be equipped with anchor plate having a minimum area of 14 square inches. Posts shall be studded, embossed, or punched. Posts and anchor plates shall conform to the requirements of ASTM A702.

7. Live stakes can be used in addition to wooden stakes and shall be in accordance with project specifications and plans. See plans for applicability and species selection and spacing.

8. Filter socks are filled at project site and may be up to 250 feet long. When used on long slopes, filter socks may be jointed or staggered as shown in details.

9. Remove sediment from behind the filter sock once it accumulates to one-half of the original height of the filter sock.

10. Inspect filter socks after each runoff event. Remove and replace if signs of undercutting or downstream rills are observed.

11. Filter socks should be removed from slopes after stabilization is complete, unless directed to leave in place by Agency.

12. Removal shall be accomplished by cutting sock open and spreading the fill material on the site. All non-biodegradable materials shall be removed. Filter socks applied in ditches shall be completely removed once vegetation is established or as directed otherwise by Agency.

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OREGON DEPARTMENT OF TRANSPORTATION

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
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EXPIRES JUNE 30, 2012

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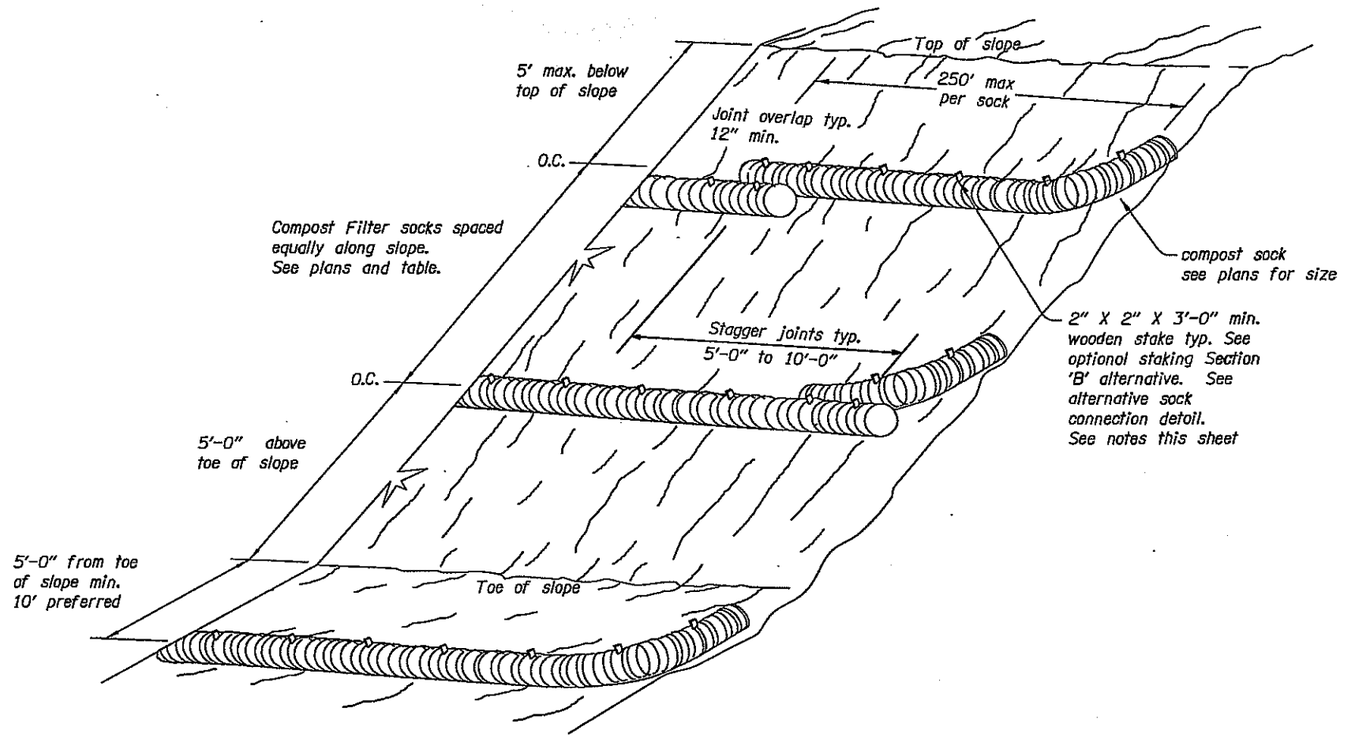
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

EROSION CONTROL DETAILS

SHEET NO. GA-4

COMPOST FILTER SOCK
SEDIMENT BARRIER (TYPE 8)



SLOPE APPLICATION
PERSPECTIVE VIEW
N.T.S.

Compost Filter Sock Slopes, Slope Lengths, and Sock Diameters		
Slope	Slope Length (feet)	Sock Diameter (inches)
< 50:1	250	8
50:1 – 10:1?	125	12
10:1 – 5:1	100	12
	50	18
> 2:1	25	18

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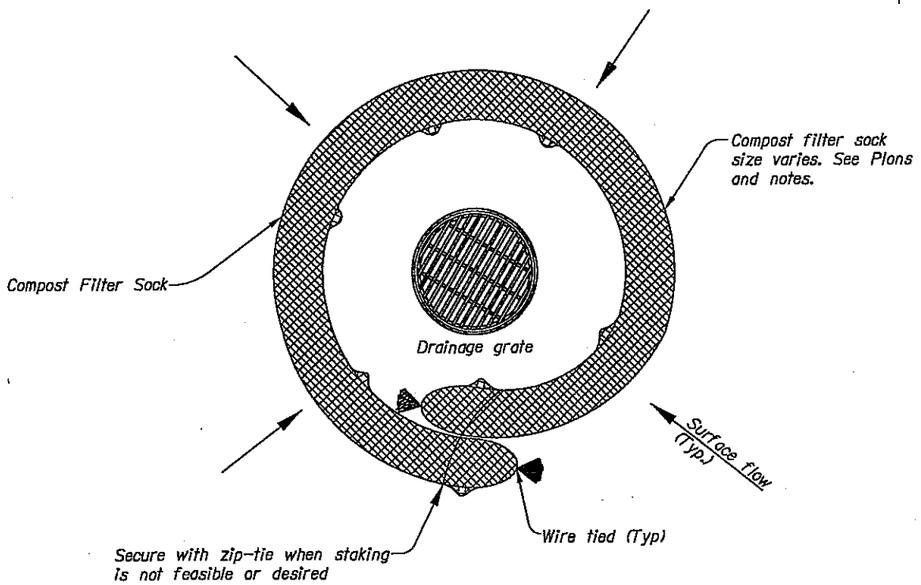
Drafted By - Sadie Reiter

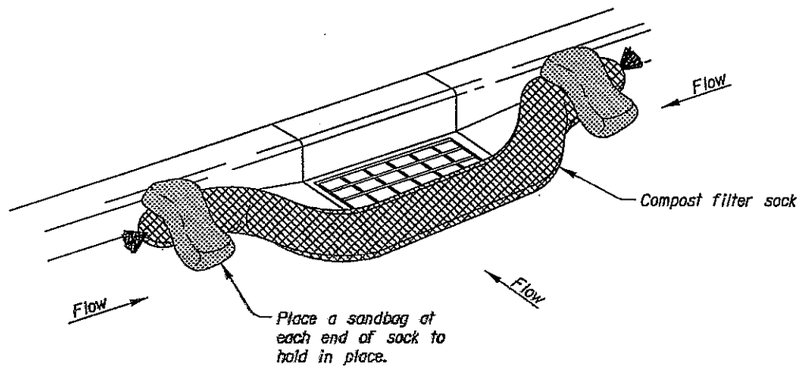
EROSION CONTROL DETAILS

SHEET NO. GA-5

COMPOST FILTER SOCK INLET PROTECTION (TYPE 7)



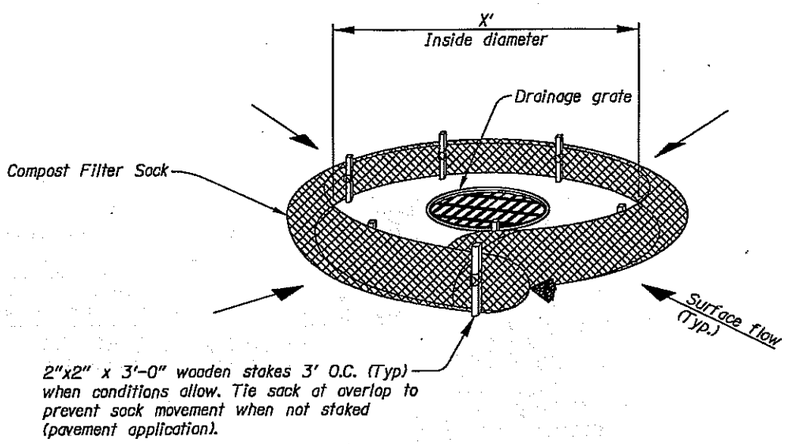
DROP INLET PLAN
N.T.S.



CURB INLET PERSPECTIVE VIEW
N.T.S.

Notes:

1. *Anchoring stakes shall be sized, spaced, and be of a material that effectively secures the filter sock. Stake spacing shall be a maximum of three feet.*
2. *Overlap ends of sock per manufacturers recommendations. (1' min. 3' max.)*
3. *Use 8" to 12" dia. sock on curbside in traffic areas.*
4. *Use 12" – 18" dia. sock in non-traffic areas or areas where safety is not a concern.*



DROP INLET PERSPECTIVE VIEW
N.T.S.

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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
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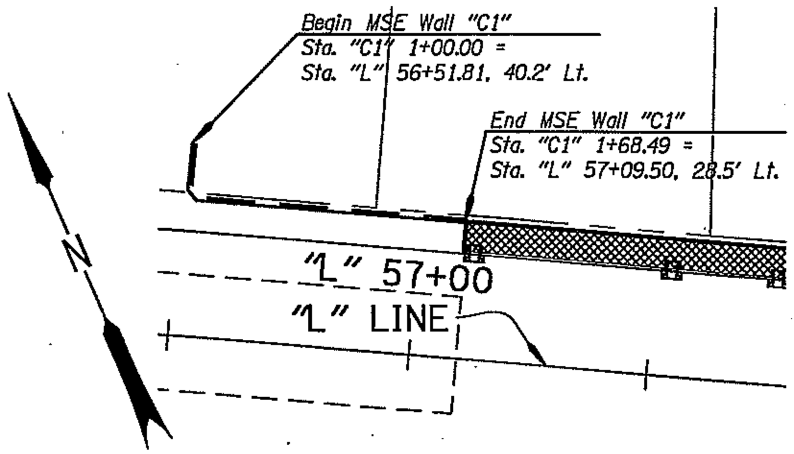
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

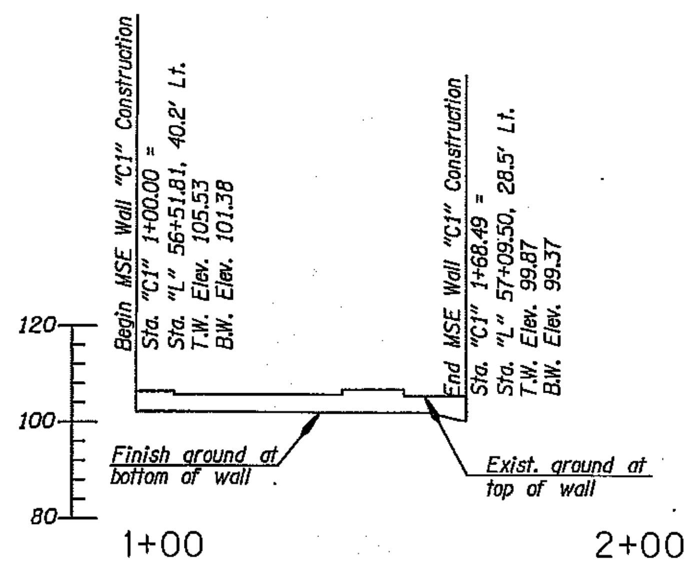
EROSION CONTROL DETAILS

SHEET NO. GA-6

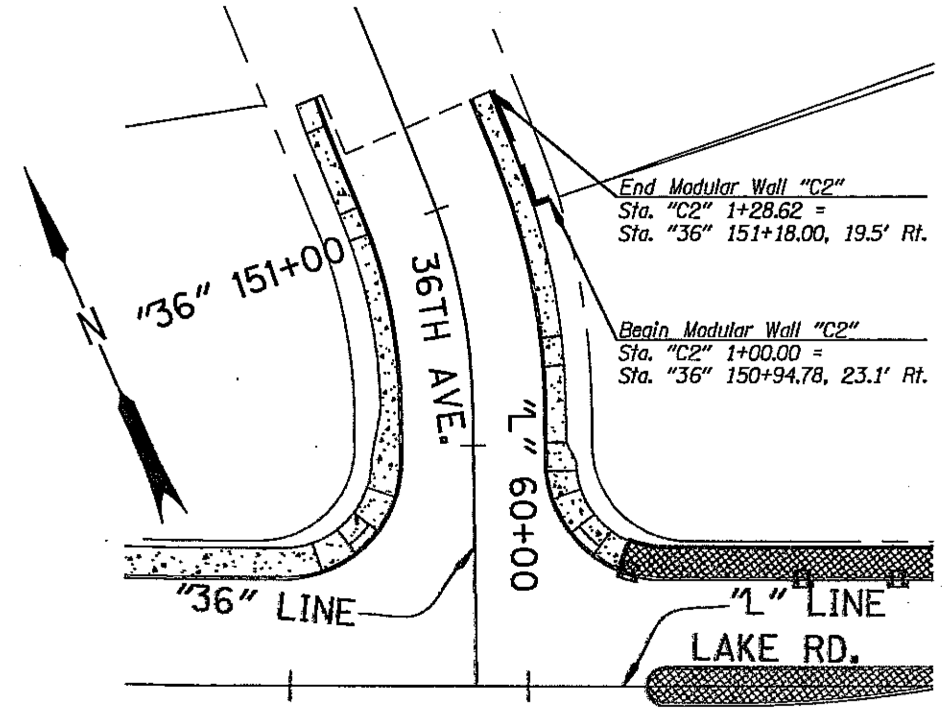
Sec. 36, T.1 S, R. 1 E W.M.



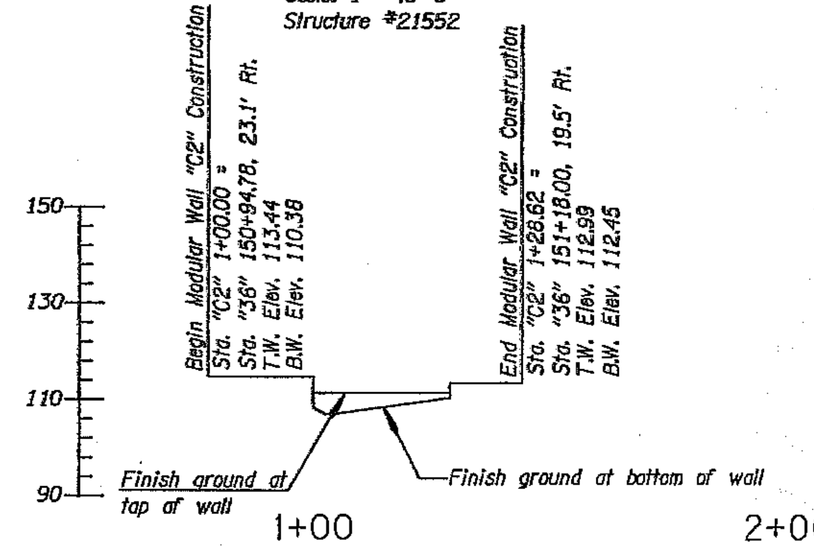
PLAN WALL "C1"
Scale: 1"= 40'-0"
Structure #21551



ELEVATION WALL "C1"
Scale: 1"= 40'-0"
Structure #21551



PLAN WALL "C2"
Scale: 1"= 40'-0"
Structure #21552



ELEVATION WALL "C2"
Scale: 1"= 40'-0"
Structure #21552

Note

1. All wall elevations are approximate.
2. Bottom of wall elevations do not account for 8" min. embedment.
3. For wall details not shown, see sht. GC-6.

LEGEND

- Modular fill wall
- Modular fill wall with 4' chain link fence
- Modular cut wall

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
51051PE
OREGON
DARRIN B. STAIRS
EXPIRES JUNE 30, 2012

otak
Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

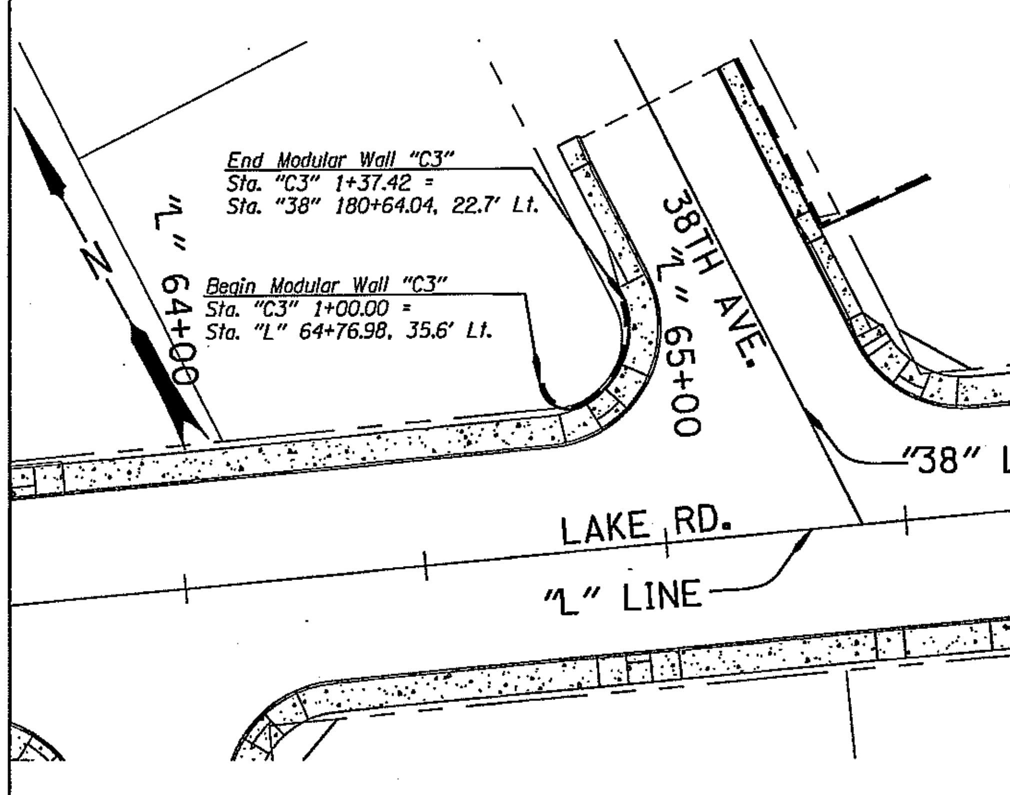
STRUCTURE NO. 21551 & 21552

MODULAR WALLS "C1" & "C2"
PLAN AND ELEVATION

SHEET NO. GC

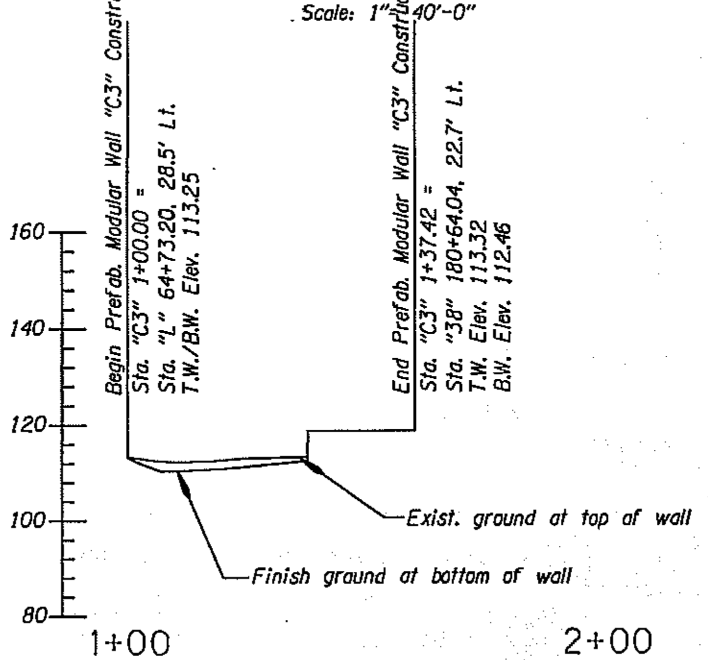
LKOTAKFREE\17/01/2009 15:00 printers.LK\PROJECTS\die30\9\4250\DWG\C350C0GC02.DWG\14300\14350\Dwg\C350C0GC00.DWG

Sec. 36, T.1 S, R. 1 E W.M.



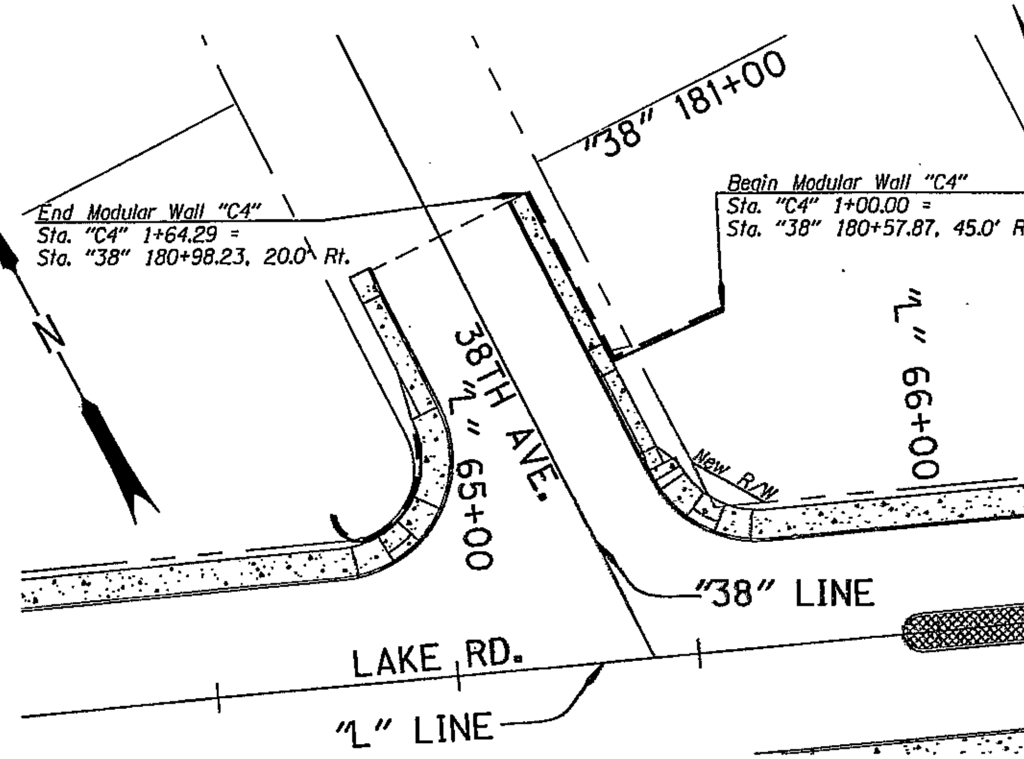
PLAN WALL "C3"

Scale: 1"= 40'-0"



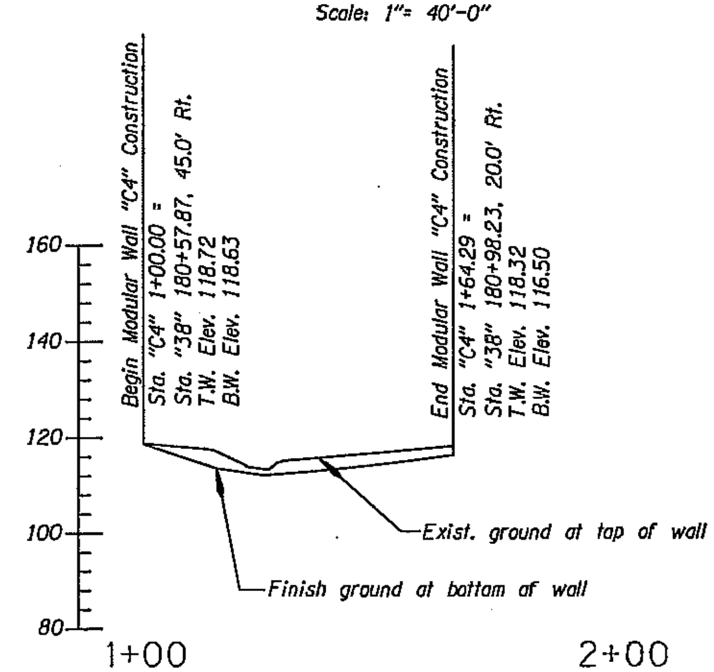
ELEVATION WALL "C3"

Scale: 1"= 40'-0"



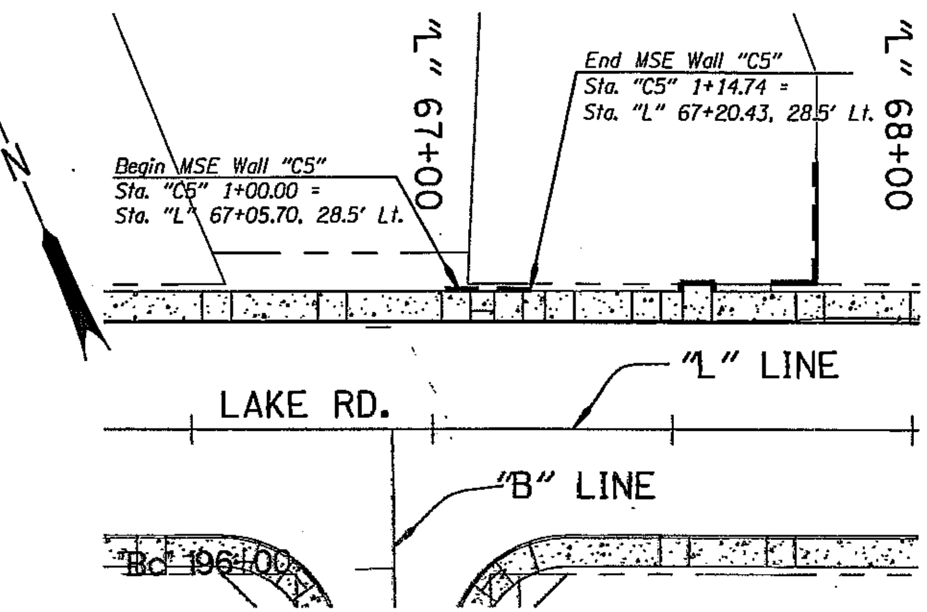
PLAN WALL "C4"

Scale: 1"= 40'-0"



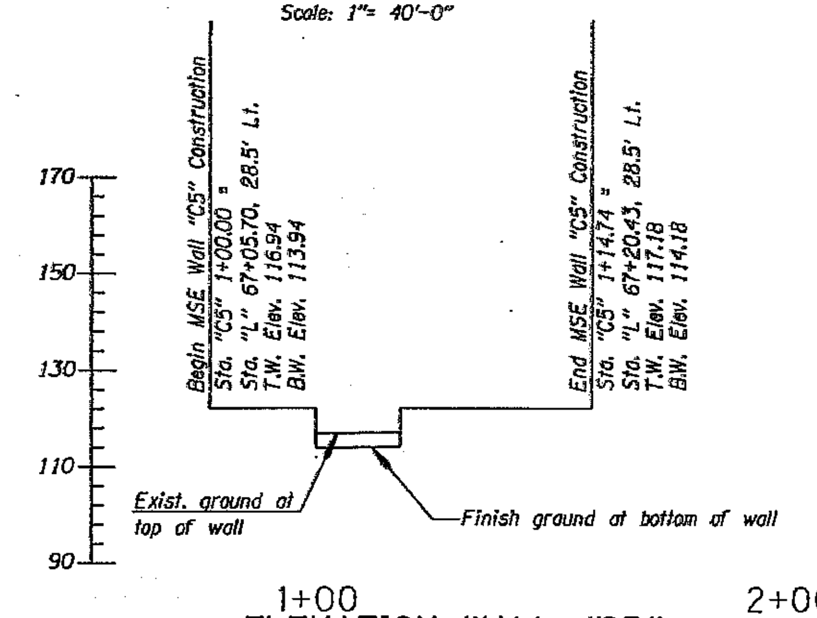
ELEVATION WALL "C4"

Scale: 1"= 40'-0"



PLAN WALL "C5"

Scale: 1"= 40'-0"



ELEVATION WALL "C5"

Scale: 1"= 40'-0"

Note

1. All wall elevations are approximate.
2. Bottom of wall elevations do not account for 8" min. embedment.
3. For wall details not shown, see sht. GC-6.

LEGEND

- Modular fill wall
- Modular fill wall with 4' chain link fence
- Modular cut wall

MILWAUKIE
Dogwood City of the West

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51051PE
OREGON
DARRIN B. STAIRS
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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
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CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

MODULAR WALLS "C3", "C4", & "C5"
PLAN AND ELEVATION

SHEET NO. GC-2

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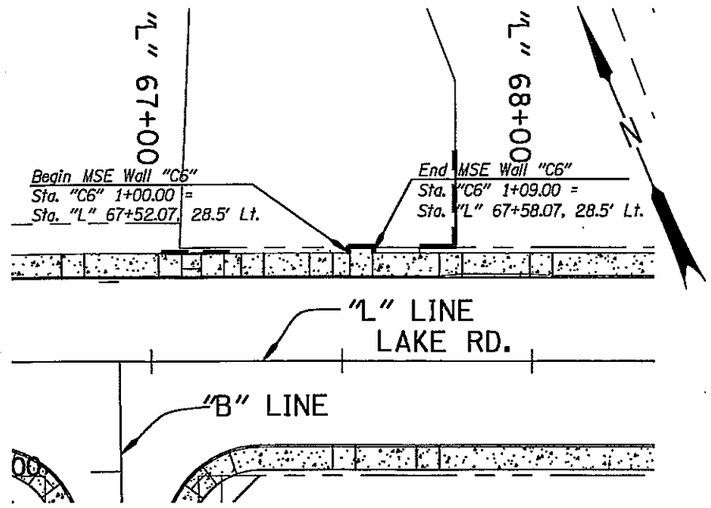
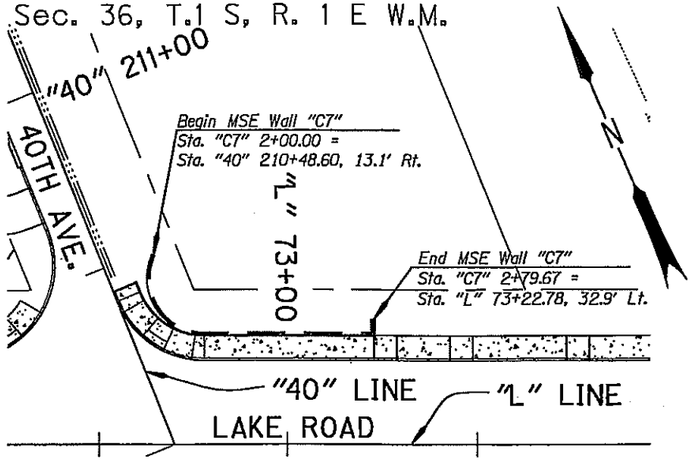


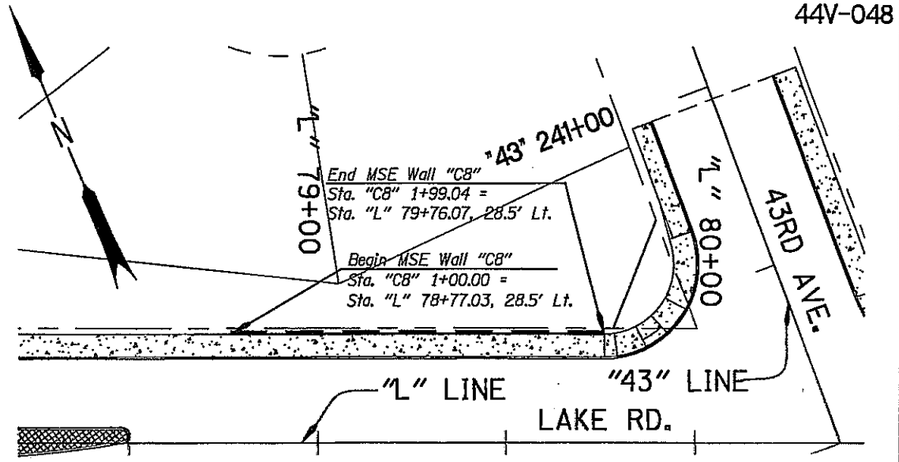
PLAN WALL "C6"

Scale: 1"= 40'-0"
Structure #21553



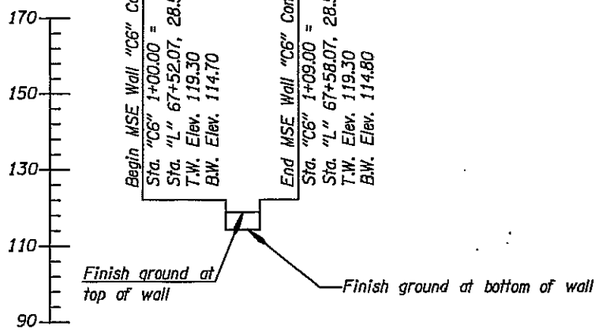
PLAN WALL "C7"

Scale: 1"= 40'-0"



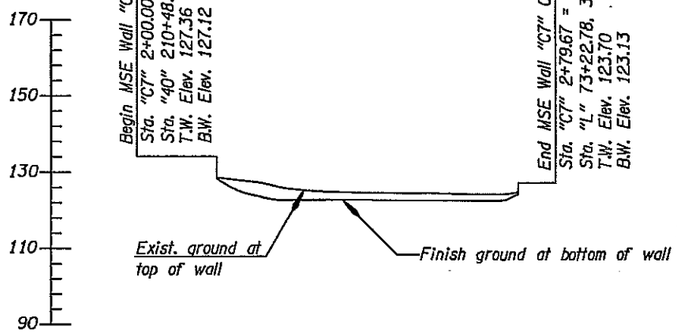
PLAN WALL "C8"

Scale: 1"= 40'-0"



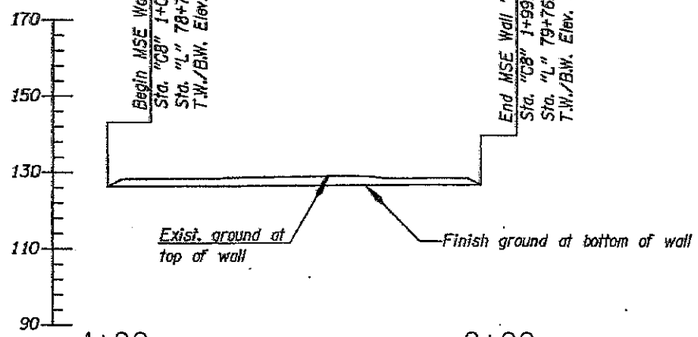
ELEVATION WALL "C6"

Scale: 1"= 40'-0"
Structure #21553



ELEVATION WALL "C7"

Scale: 1"= 40'-0"



ELEVATION WALL "C8"

Scale: 1"= 40'-0"

Note

1. All wall elevations are approximate.
2. Bottom of wall elevations do not account for 8" min. embedment.
3. For wall details not shown, see sht. GC-6.

LEGEND

- Modular fill wall
- Modular fill wall with 4' chain link fence
- Modular cut wall

MILWAUKIE
Dogwood City of the West

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OREGON
DARRIN B. STAIRS
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17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

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CLACKAMAS COUNTY

Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

STRUCTURE NO. 21553

MODULAR WALLS "C6", "C7", & "C8"
PLAN AND ELEVATION

SHEET NO. GC-3

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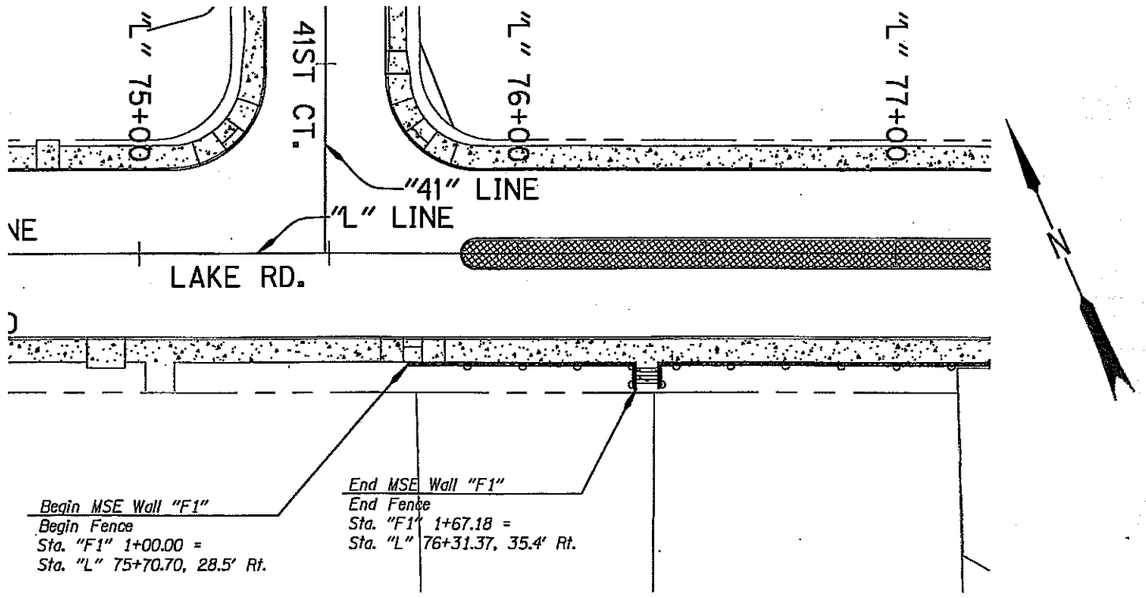
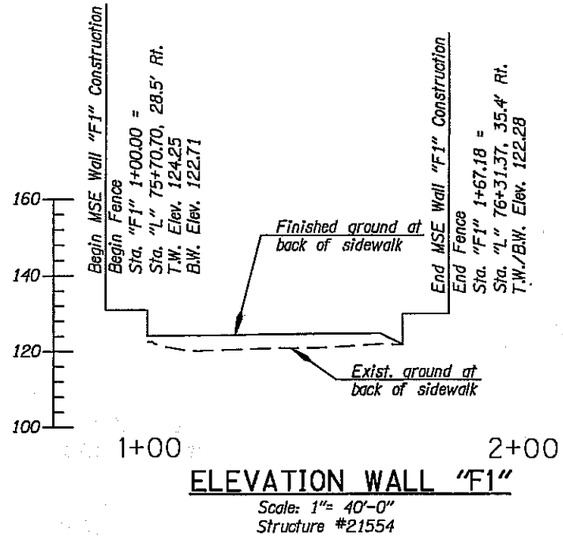
Sec. 36, T.1 S, R. 1 E W.M.



PLAN WALL "F1"
Scale: 1"= 40'-0"
Structure #21554



ELEVATION WALL "F1"
Scale: 1"= 40'-0"
Structure #21554

Note

1. All wall elevations are approximate.
2. Bottom of wall elevations do not account for 8" min. embedment.
3. For wall details not shown, see sht. GC-6.

LEGEND

- Modular fill wall
- Modular fill wall with 4' chain link fence
- Modular cut wall

MILWAUKIE
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51051PE
OREGON
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Lake Oswego, Oregon 97035
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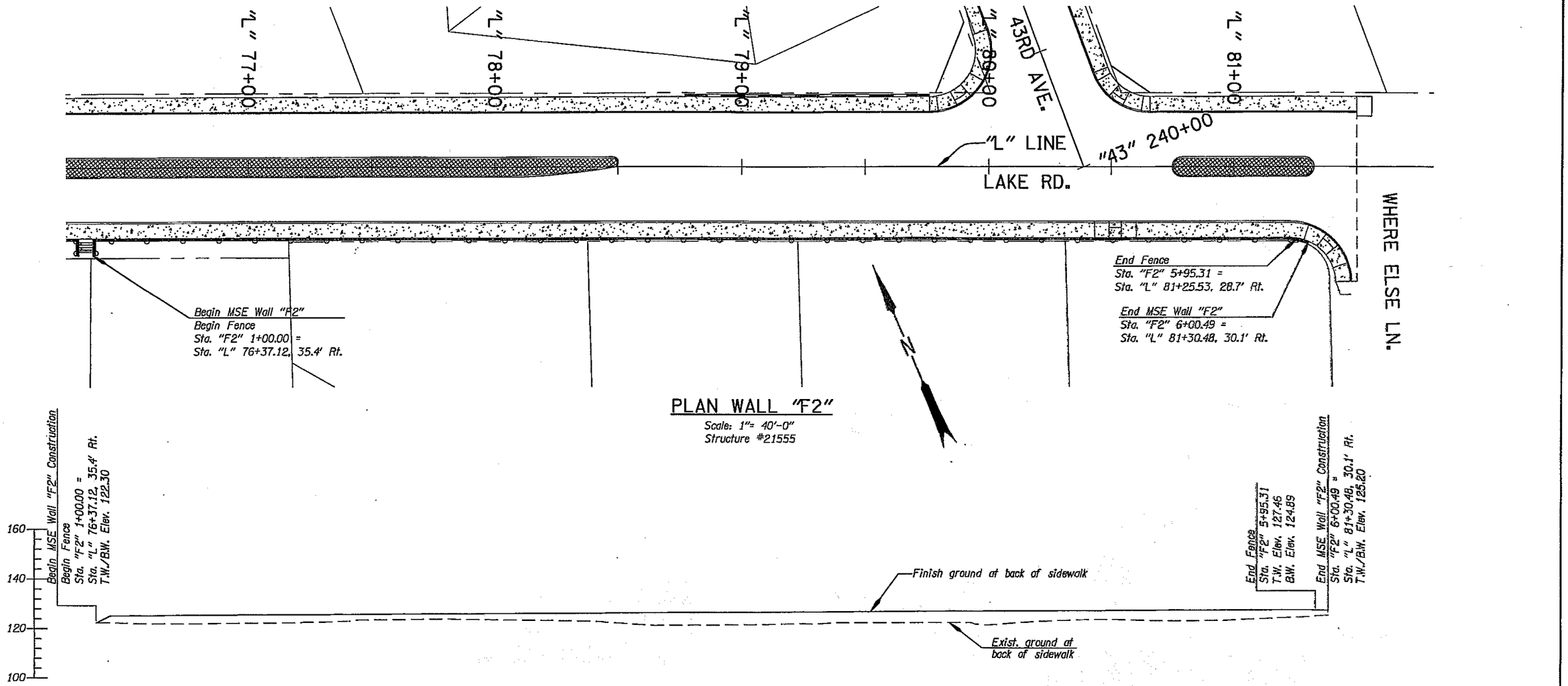
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

STRUCTURE NO. 21554

MODULAR WALL "F1" PLAN AND ELEVATION

SHEET NO. GC-4

Sec. 31, T.1 S, R. 1 E W.M. & Sec. 6, T.2 S, R. 2 E W.M.



PLAN WALL "F2"

Scale: 1"= 40'-0"
Structure #21555

ELEVATION WALL "F2"

Scale: 1"= 40'-0"
Structure #21555

Note

1. All wall elevations are approximate.
2. Bottom of wall elevations do not account for 8" min. embedment.
3. For wall details not shown, see sht. GC-6.

LEGEND

- Modular fill wall
- Modular fill wall with 4' chain link fence
- Modular cut wall

MILWAUKIE
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51051PE
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DARRIN B. STAIRS
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Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

STRUCTURE NO. 21555

MODULAR WALL "F2" PLAN AND ELEVATION

SHEET NO. GC-5

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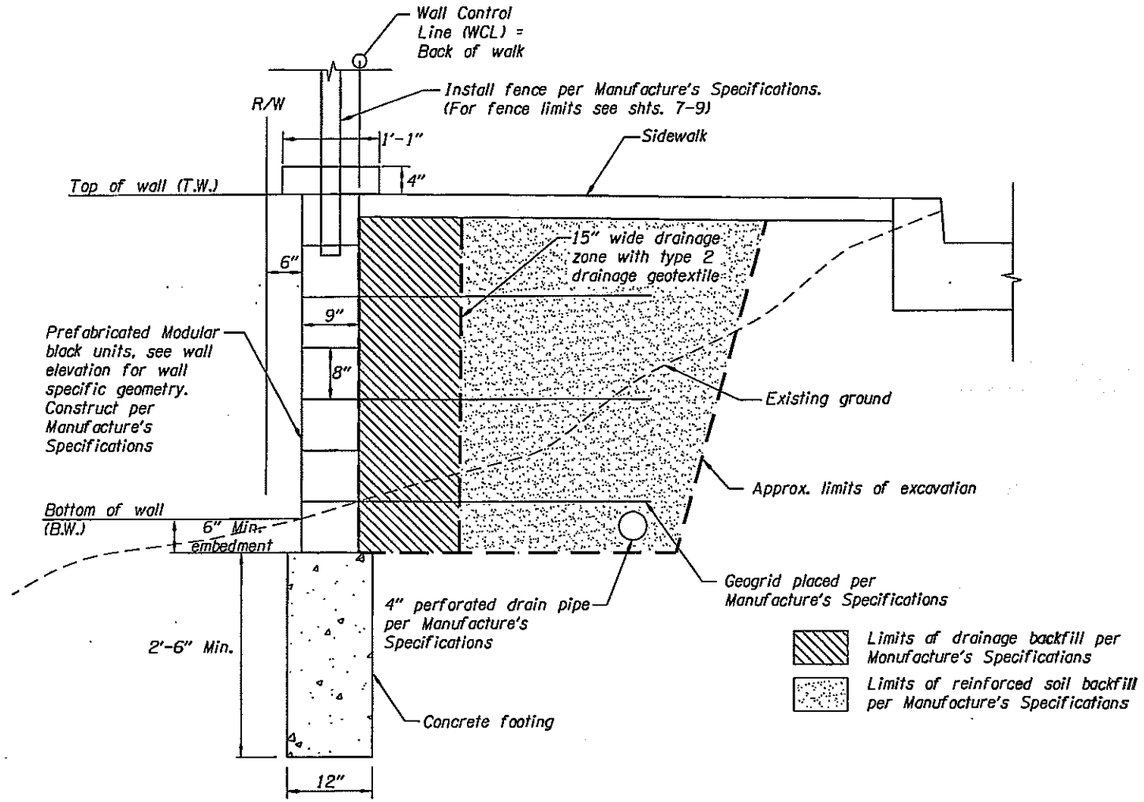
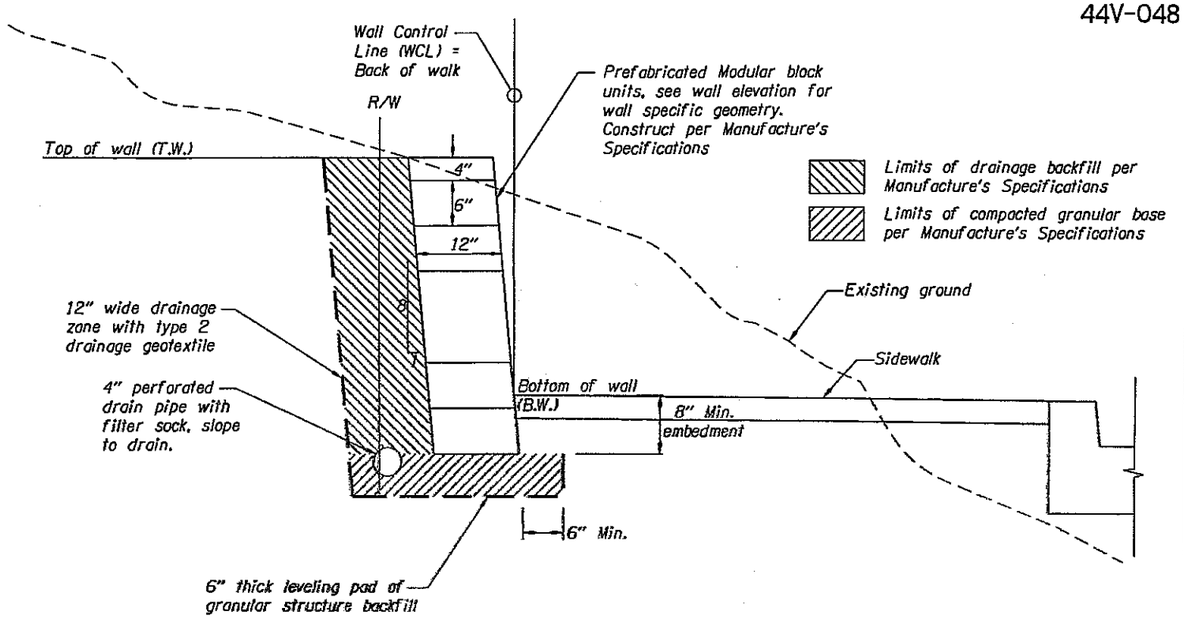
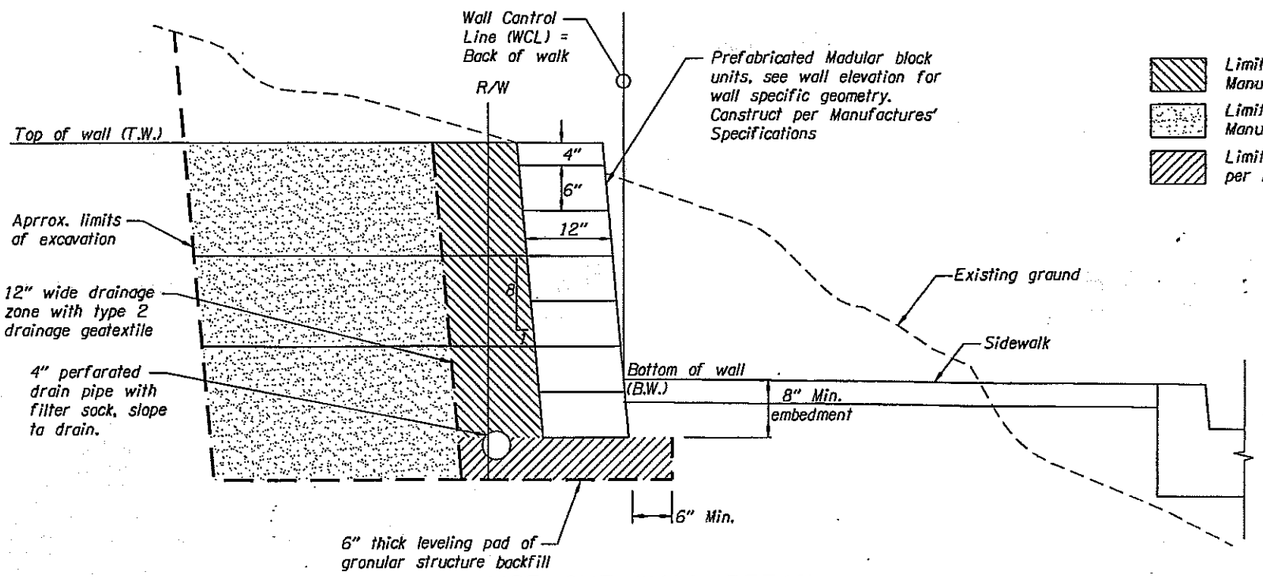


FILL WALL DETAIL
N.T.S.



GRAVITY CUT WALL DETAIL
N.T.S.



MSE CUT WALL DETAIL
N.T.S.

MILWAUKIE
Dogwood City of the West

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OREGON
DARRIN B. STAIRS
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Lake Oswego, Oregon 97035
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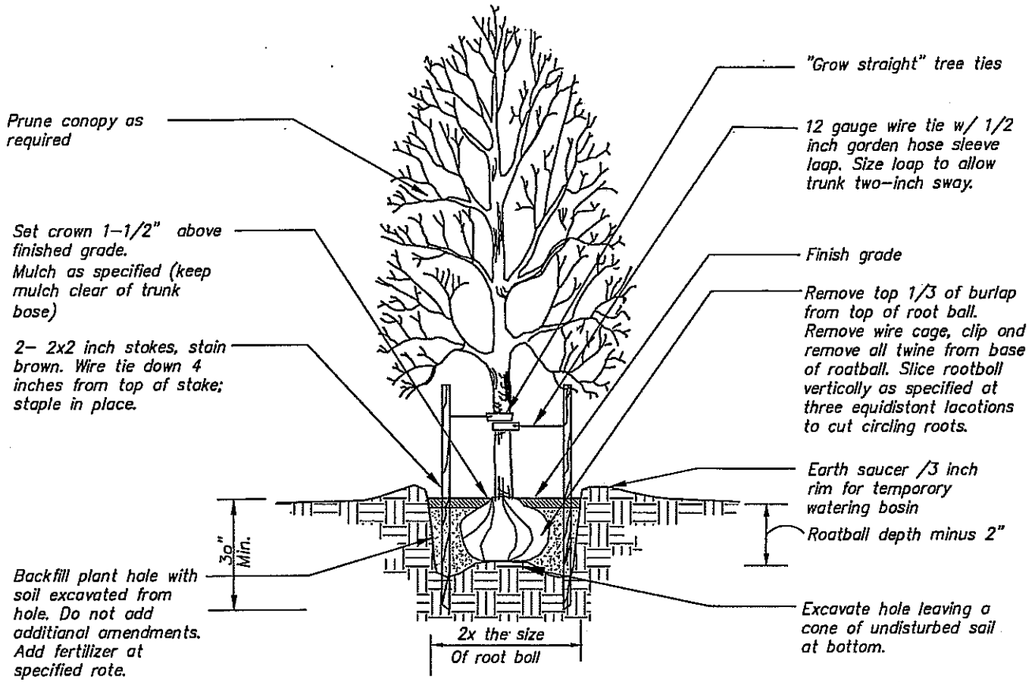
CLACKAMAS COUNTY

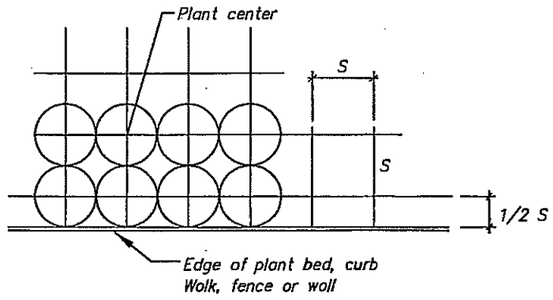
Design Team Leader - Darrin Stairs, PE
Designed By - Sarah Espinosa, PE
Drafted By - Sadie Reiter

MODULAR WALL DETAILS

SHEET NO.
GC-6

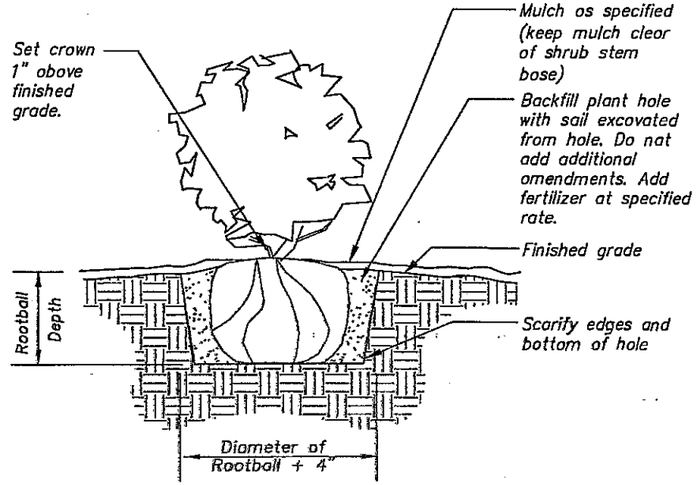


TREE PLANTING DETAIL

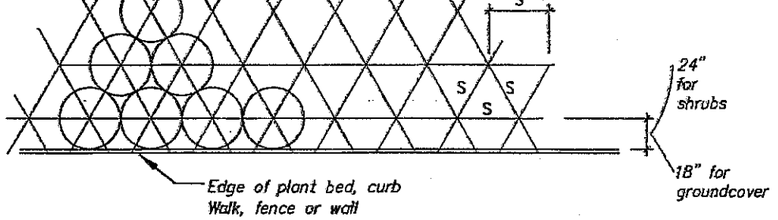


S = spacing on center (o.c.) as shown on plans

SQUARE PLANT SPACING

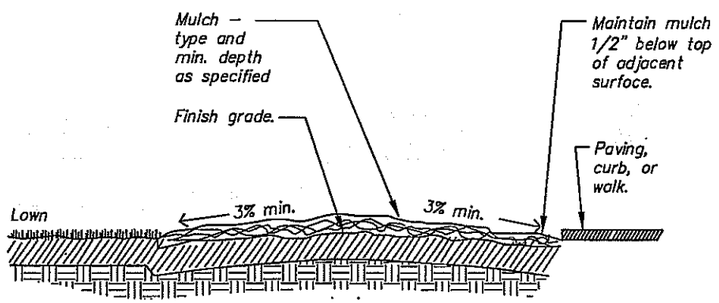


SHRUB PLANTING DETAIL



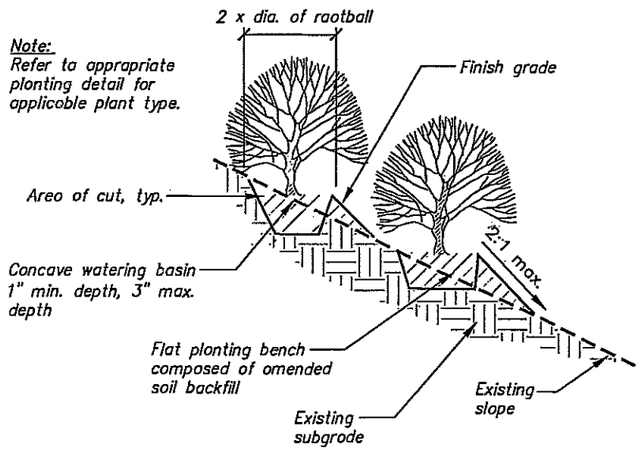
S = spacing on center (o.c.) as shown on plans

PLANT SPACING



Notes:
1. The minimum slope for planting areas is 3%.

SECTION - PLANTING BED GRADING



SHRUB/TREE PLANTING ON SLOPE

MILWAUKIE Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED 263 DAVID D. HAYNES OREGON LANDSCAPE ARCHITECT

otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landscape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

PLANTING DETAILS

SHEET NO. GN

Utility note:

Contractor is cautioned that existing underground facilities occur throughout the work areas including but not limited to power, gas, telephone, and water supply. Contractor shall mark the facilities before work, pothole where necessary, and protect during construction. Immediately notify owner's representative if any conflicts are found.

Landscape notes:

1. *General: several of the following notes summarize the project specifications for the contractors convenience. If a discrepancy exists between these notes and the project specifications the specifications shall override.*
2. *The landscape contractor is to thoroughly review the site. If there are any discrepancies between the plan and the existing conditions the owners representative is to be notified immediately.*
3. *If the landscape contractor starts work before site conditions are ready or continues work in adverse conditions without prior approval they will be responsible for any additional costs relating to the condition.*
4. *Immediately notify owners representative concerning any condition at any time during construction that is detrimental to the health and vigorous growth of the specified plant material.*
5. *Provide quantity of plant material indicated in plant list or the quantity required to cover areas indicated at specified spacing, whichever is greater.*
6. *If an area differs significantly in size from that scaled on drawing and requires more or less material the owners representative is to be informed.*
7. *Topsoil: Place 12-inch depth imported topsoil in planted areas unless noted otherwise. Topsoil shall be prepared in accordance with the details and specifications.*
8. *Soil Conditioner: Apply 3-inch depth soil conditioner (compost) to topsoil. Till to a depth of 6".*
9. *Soil analysis: contractor shall obtain a copy of owner-provided soil test and amend and fertilize topsoil in conformance with recommendations indicated in the report.*
10. *Fertilizer: apply fertilizer to all plant holes of the type, quantity, application method, and timing noted in the specifications.*
11. *Bark mulch: spread 3 inch depth fine-medium grade fir/hemlock bark over all shrub beds. Keep bark clear of tree and shrub stem base.*
12. *Planting pockets: back fill plant hole with soil excavated from hole. Do not add additional amendments.*
13. *Plant material: all plant material shall meet minimum quality and size requirements established in the American Standard for Nursery Stock guidelines.*
14. *Leave plant name identification tags on ten percent of all trees and shrubs installed to aid inspectors in verifying that specified plants have been installed.*
15. *Plant center of shrubs a minimum of 24 inches from adjacent paving. Plant center of ground covers a minimum of 18 inches from adjacent paving.*
16. *Where plant bed slope is less than 3% mound planting bed areas 3% minimum for positive drainage.*
17. *Contractor shall provide plant establishment watering throughout warranty period.*
18. *See specifications for final inspection, maintenance, and warranty requirements unique to this project.*
19. *See specifications for other landscape construction requirements.*

BOTANICAL NAME	COMMON NAME	GRADE CLASS	PLANT TYPE	SPACING	TOTAL
Deciduous Trees					
Acer compestre 'Evelyn'	Queen Elizabeth Maple	6.4.2.5 Type 5	Deciduous Tree	As shown	2
Cladrastis kentuckea	American Yellowwood	6.4.2.5 Type 5	Deciduous Tree	As shown	8
Koelreuteria paniculata 'September'	September Goldenrain Tree	6.4.2.5 Type 5	Deciduous Tree	As shown	6
Nyssa sylvatica	Tupelo	6.4.2.5 Type 5	Deciduous Tree	As shown	11
Ostrya virginiana	American Hophornbeam	6.4.2.5 Type 5	Deciduous Tree	As shown	3
Shrubs					
Gaultheria shallon	Salal	4.1.2.2 Type 2	No. 2 Container	2' o.c.	432
Mahonia aquifolium	Oregon Grape	4.1.2.2 Type 2	No. 2 Container	3' o.c.	47
Physocarpus capitatus	Pacific Ninebark	4.1.2.2 Type 2	No. 2 Container	3' o.c.	38
Rosa pisocarpa	Swamp Rose	4.1.2.2 Type 2	No. 2 Container	3' o.c.	16
Spiraea betulifolia	Birchleaf Spireo	4.1.2.2 Type 2	No. 2 Container	2' o.c.	118
Cytisus x proecox 'Moonlight'	Moonlight Warminster Broom	4.1.2.2 Type 2	No. 2 Container	3' o.c.	94
Herbaceous					
Camas leichtlinii	Great Camas Lily		Bulb	In groups of 6 bulbs as shown	414
Carex obnupta	Slough Sedge		No. 1 Container	12" o.c.	386
Carex testacea	New Zealand Orange Sedge		No. 1 Container	12" o.c.	164
Deschampsia coespitosa	Tufted Hairgrass		No. 1 Container	12" o.c.	995
Juncus effusus var pacificus	Soft Rush		No. 1 Container	12" o.c.	261
Sedum areganum	Oregon Stonecrop		4" pots	12" o.c.	1443

MILWAUKIE
Dogwood City of the West

REGISTERED
263
DAVID D. HAYNES
OREGON
LANDSCAPE ARCHITECT

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otak Otak Inc.
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Landcape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

PLANT LIST AND NOTES

SHEET NO. GN-2

BID ITEM		Deciduous Trees					SHRUBS No. 2 Container						Bulbs	Herbaceous No. 1 Container					Herbaceous 4" Pots	Topsoil	Soil Conditioner	Bark Mulch	Root Barrier
DESCRIPTION		2" caliper Acer campestre 'Evelyn'	2" caliper Clodrastis kentuckea	2" caliper Koelreuteria paniculata 'September'	2" caliper Nyssa sylvatica	2" caliper Ostrya virginiana	No. 2 container Cytisus x praecos 'Moonlight'	No. 2 container Gaultheria shallon	No. 2 container Mahonia aquifolium	No. 2 container Physocarpus capitatus	No. 2 container Rosa pisocarpa	No. 2 container Spiraea betulifolia 'Tor'	Camas leichtlinii	No. 1 container Carex obnupta	No. 1 container Carex testacea	No. 1 container Deschampsia caespitosa	No. 1 container Juncus effusus var pacificus	4" Pots Sedum oreganum				
Units		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	CY	CY	CY	LF
Page																						
GN4		–	–	2	3	–	–	–	6	12	–	106	72	211	164	130	–	–	22	5	5	48
GN5		–	–	1	4	2	41	45	–	13	–	12	162	175	–	319	261	661	48	12	12	130
GN6		–	–	3	4	1	13	179	8	13	16	–	180	–	–	546	–	60	33	8	8	108
GN7		2	8	–	–	–	40	208	33	–	–	–	396	–	–	–	–	722	80	20	20	240
Subtotal:		2	8	6	11	3	92	432	47	38	16	118	810	386	164	995	261	1443	183	45	45	526
TOTAL:		30					743						810	1805				1443	183	45	45	526

MILWAUKIE
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OREGON
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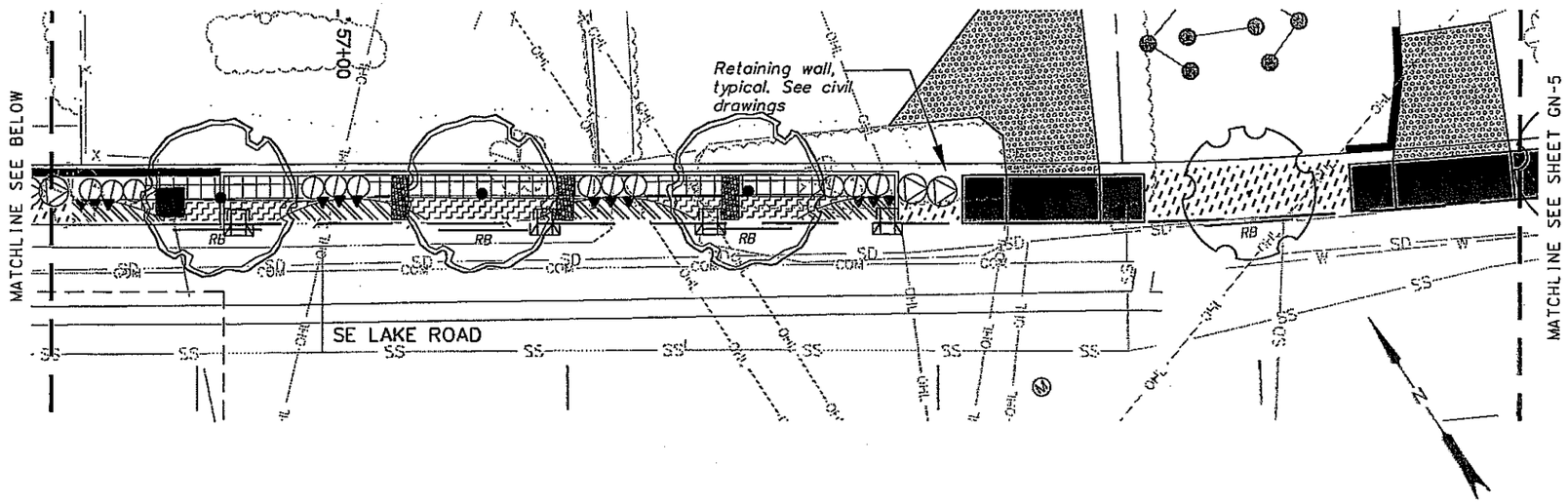
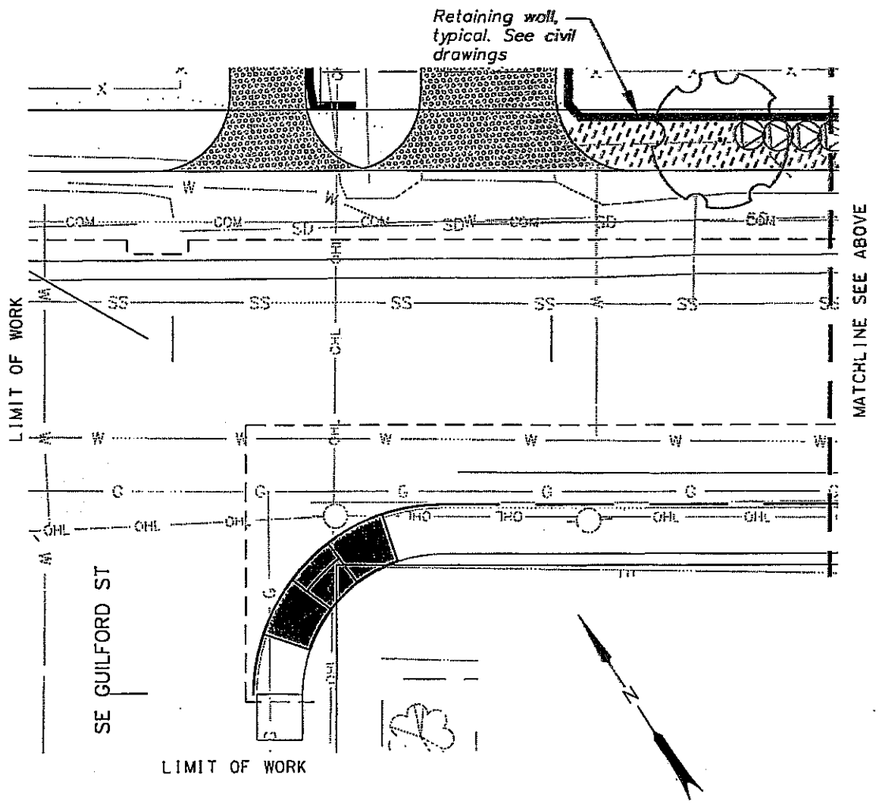
Landscape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

BID LOG

SHEET NO. GN-3

Sec. 36, T.1 S, R. 1 E W.M.





NOTES:

Restore all areas disturbed by construction to original conditions.

See sheet GN-8 for planting legend.
See sheets GN and GN-2 for planting notes and details.

Restore areas disturbed by construction. In areas with existing maintained landscape, provide import topsoil, planting area preparation, and plant materials to match existing adjacent landscape. In non-maintained areas, provide planting area preparation and seed with Permanent Seed Mix.

20' 0' 20' 40'
SCALE IN FEET

MILWAUKIE
Dogwood City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED
263
DAVID D. HAYNES
OREGON
LANDSCAPE ARCHITECT

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

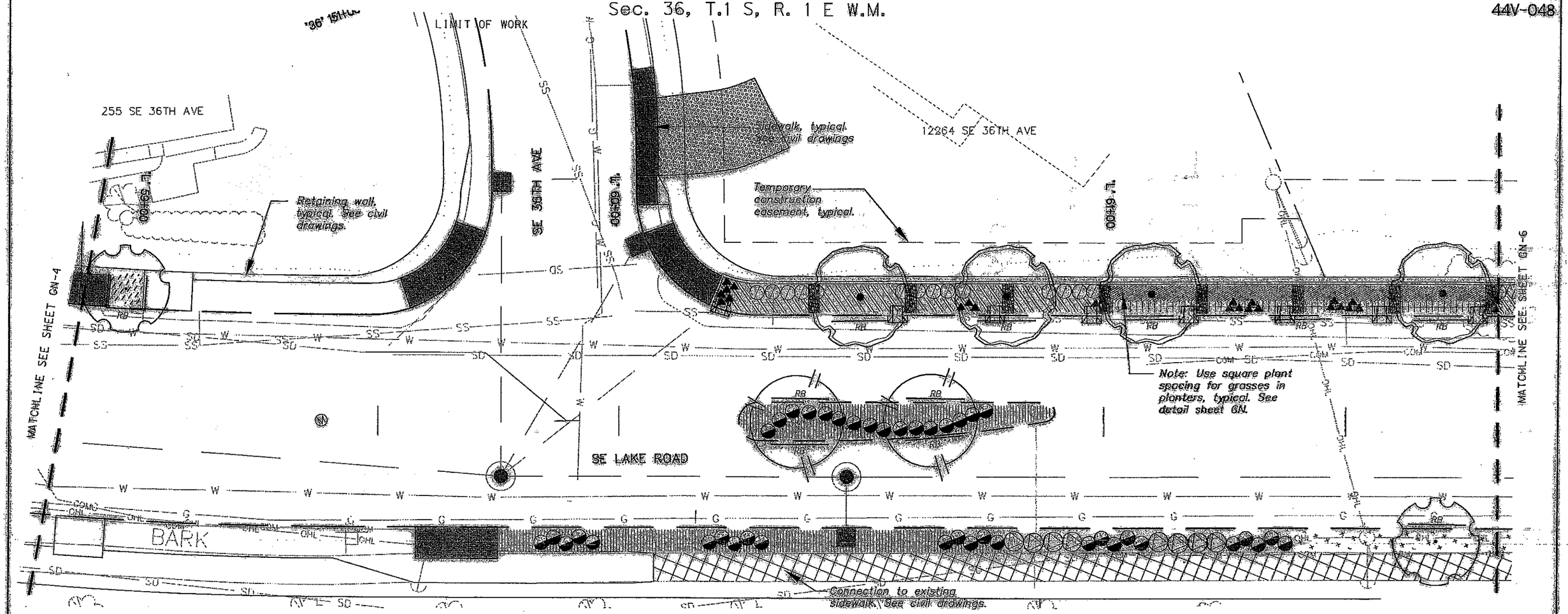
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landcape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

PLANTING PLAN A
STA "L" 53+80 TO STA "L" 58+85

SHEET NO. GN-4

Sec. 36, T.1 S, R. 1 E W.M.



NOTES:

Restore all areas disturbed by construction to original conditions.

See Sheet GN-8 for planting legend.
See sheets GN and GN-2 for planting notes and details.

Restore areas disturbed by construction. In areas with existing maintained landscape, provide import topsoil, planting area preparation, and plant materials to match existing adjacent landscape. In non-maintained areas, provide planting area preparation and seed with Permanent Seed Mix.

20' 0' 20' 40'
SCALE IN FEET

N

MILWAUKIE
Designed City at the River

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED 263 DAVID D. HAYNES OREGON LANDSCAPE ARCHITECT

otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-6395

SE LAKE RD - OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landscape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

PLANTING PLAN B
STA "L" 58+85 TO STA "L" 63+50

SHEET NO. GN-5

\\OTAKTREE\lko5hp8150n.printers.LKO.OTAK L:\Project\14300\14350\Dwg\C350GN4-GN8.dwg 1/5/2011 3:51 PM Mattk

Sec. 36, T.1 S, R. 1 E W.M.

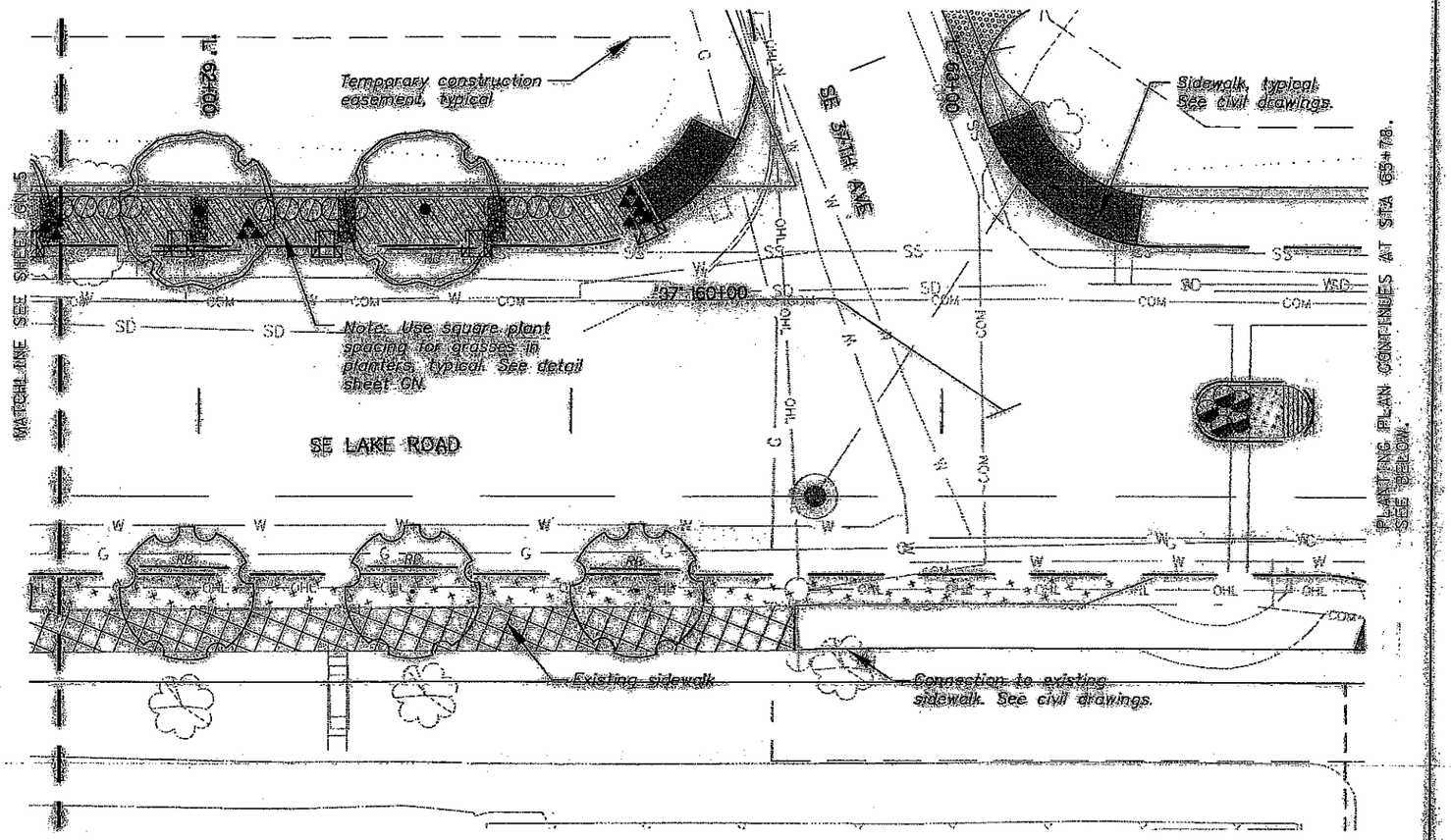
44V-048

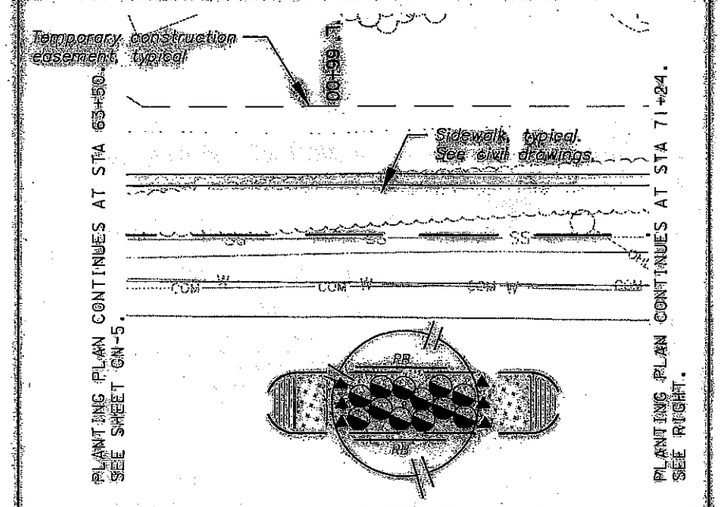
NOTES:

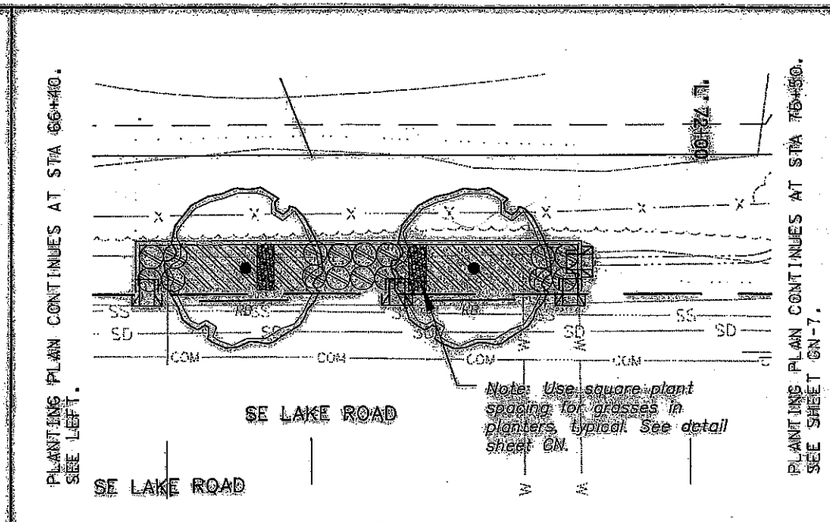
Restore all areas disturbed by construction to original conditions.

See sheet GN-8 for planting legend.
See sheets GN and GN-2 for planting notes and details.

Restore areas disturbed by construction. In areas with existing maintained landscape, provide import topsoil, planting area preparation, and plant materials to match existing adjacent landscape. In non-maintained areas, provide planting area preparation and seed with Permanent Seed Mix.







20' 0' 20' 40'
SCALE IN FEET

MILWAUKIE
Discovered City of the West

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED 263 DAVID D. HAYNES OREGON LANDSCAPE ARCHITECT

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD: OATFIELD RD. - WHERE ELSE LN. (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landscape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

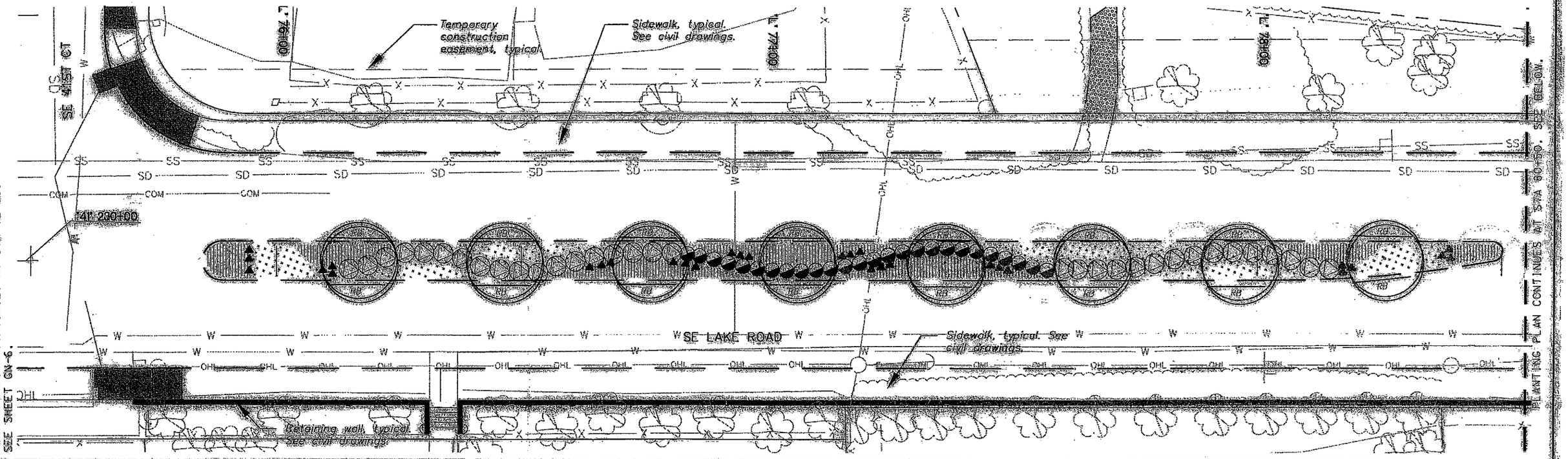
PLANTING PLAN C

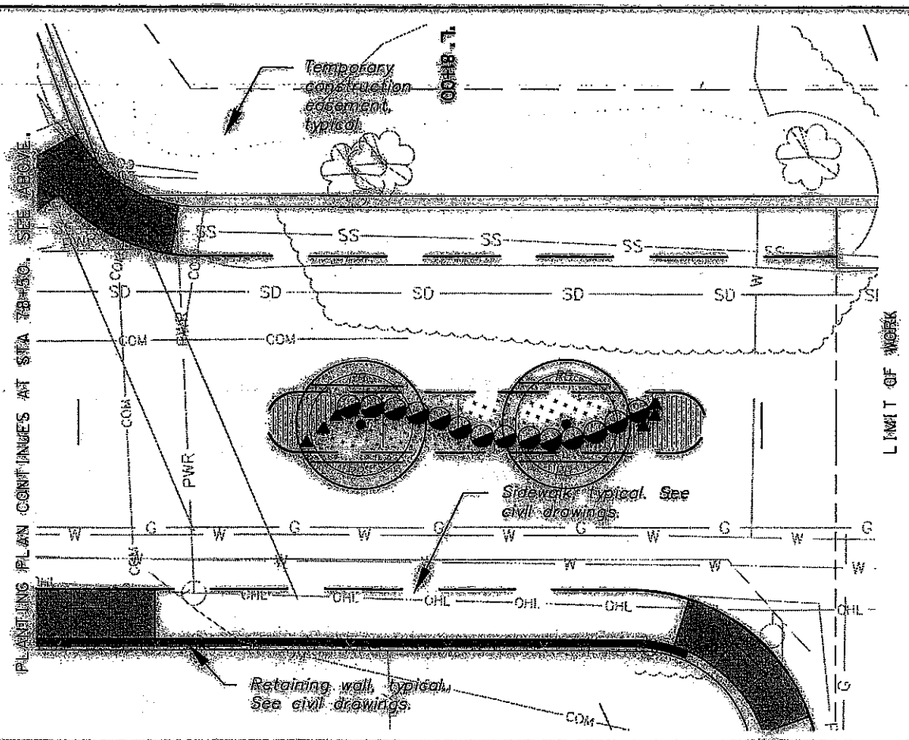
STA "L" 65+75 TO STA "L" 66+40 and STA "L" 71+75 TO STA "L" 74+00

SHEET NO. GN-6

\\OTAKTREE\ko5hp8150n.printers.LKO.OTAK L:\Project\14300\14350\Dwg\C350GN4-GN8.dwg 1/5/2011 3:51 PM mattk

Sec. 36, T.1 S, R. 1 E W.M.





NOTES:

Restore all areas disturbed by construction to original conditions.

See sheet GN-8 for planting legend.
See sheets GN and GN-2 for planting notes and details.

Restore areas disturbed by construction. In areas with existing maintained landscape, provide import topsoil, planting area preparation, and plant materials to match existing adjacent landscape. In non-maintained areas, provide planting area preparation and seed with Permanent Seed Mix.

20' 0' 20' 40'
SCALE IN FEET

MILWAUKIE
Dogwood City of the West

REGISTERED 263 DAVID D. HAYNES OREGON LANDSCAPE ARCHITECT

OREGON DEPARTMENT OF TRANSPORTATION

Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

SE LAKE RD, OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landscape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

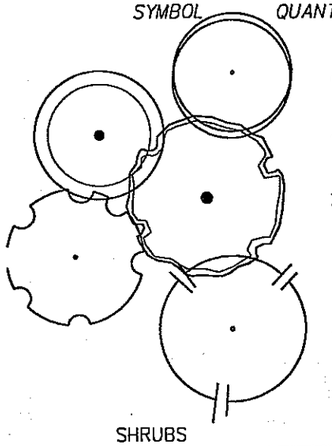
PLANTING PLAN D
STA "L" 75+50 TO STA "L" 78+55

SHEET NO. GN-7

\\OTAK1REL\ko5hp@150n.printers.LKO.OTAK L:\Project\14300\14350\Dwg\C350GN4-GN8.dwg 1/5/2011 3:52 PM Mattk

PLANT LEGEND

TREES



SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and Description
	8	American Yellowwood / *Clodrastis kentuckeo*	2" coliper, B&B
	2	Queen Elizabeth Mople / *Acer compestra 'Evelyn'*	2" coliper, B&B
	11	Tupelo / *Nyssa sylvatico* *Nyssa sylvatica*	2" caliper, B&B
	6	September Goldenrain Tree / *Koelreuteria poniculata 'September'*	2" caliper, B&B
	3	American Hophornbeam / *Ostrya virginiono*	2" coliper, B&B

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanicol name:	Size	Spacing
⊘	38	Pocific Ninebark / *Physocarpus capitatus*	2 Gal.	3' o.c.
	118	Tor Birchleof Spirea / *Spiroea betulifolia 'Tor'*	2 Gal.	2' o.c.
◒	94	Moonlight Warminster Broom *Cytisus x praecox 'Moonlight'*	2 Gal.	3' o.c.
⊘	16	Swamp Rose / *Rosa pisocorpo*	2 Gal.	3' o.c.
△	47	Oregon Grape / *Mahonia aquifolium*	2 Gal.	3' o.c.
+ + + + + + + +	432	Salal /*Goultheria shallon*	2 Gal.	2' o.c.

HERBACEOUS PLANTS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	1443	Oregon Stonecrop / *Sedum oregonum*	4" pots, 12" o.c.
◀	414	Great Camas Lily / *Camas leichtlinii*	grp of 6 bulbs 6" o.c.
	386	Slough Sedge / *Carex obnupta***	1 Gal, 12" o.c.
	164	New Zealand Orange Sedge /** *Carex testacea*	1 Gal, 12" o.c.
	995	Tufted Hairgrass /** *Deschampsia caespitosa*	1 Gal, 12" o.c.
	261	Soft Rush /** *Juncus effusus var pacificus*	1 Gal, 12" o.c.

** Note: Use square plant spacing for all grasses in stormwater planters. See detail sheet GN.

OTHER

SYMBOL	QUANTITY	DESCRIPTION
RB	516 LF	DeepRoot UB 24-2 Root barrier, or approved equal. 12 LF, centered on tree trunk. Install per manufacturer's instructions. Root barrier is shown schematically for graphic clarity. Install at back of curb.
RB		

NOTES:

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MILWAUKIE
Dogwood City of the West

REGISTERED
263
DAVID D. HAYNES
OREGON
LANDSCAPE ARCHITECT

OREGON DEPARTMENT OF TRANSPORTATION

otak Otak Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035
Phone: (503)635-3618 Fax: (503)635-5395

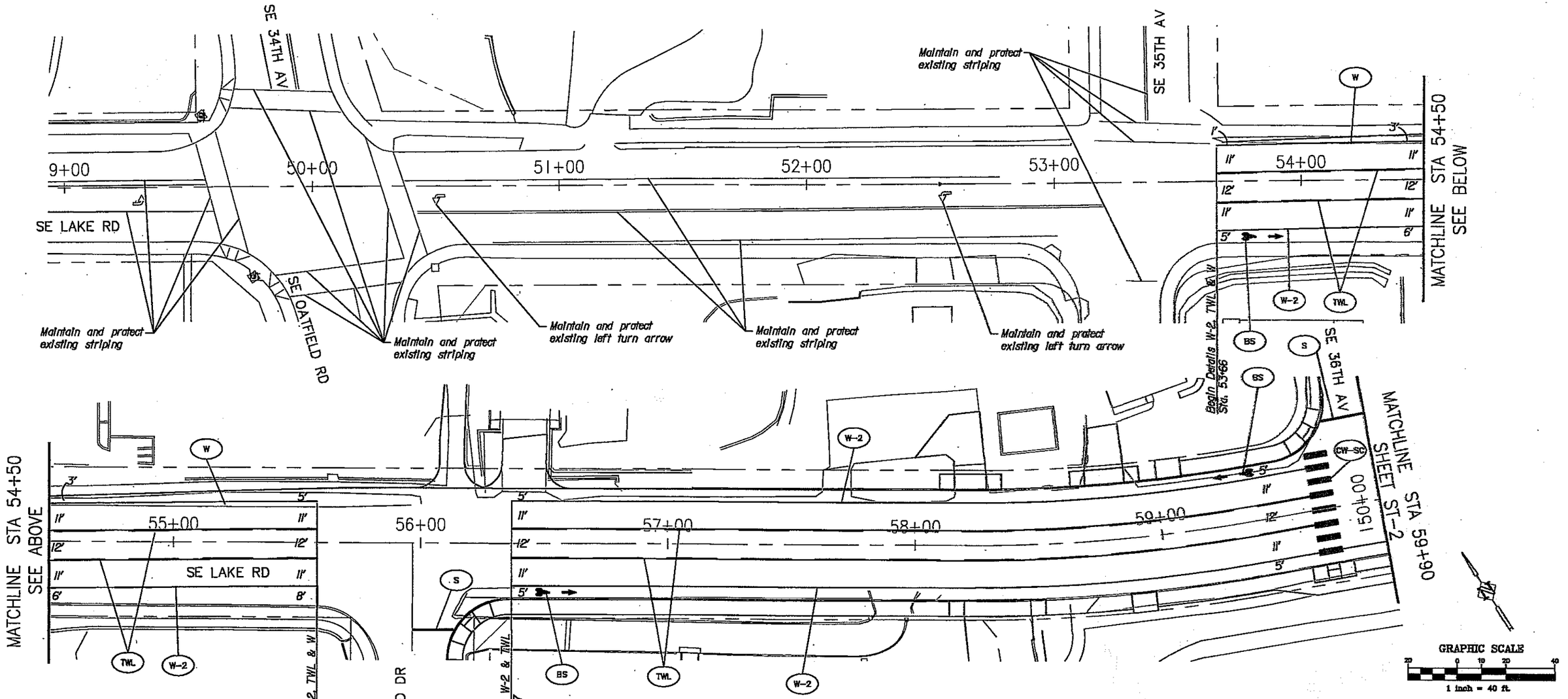
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Landcape Architect - David Haynes
Designed By - Maggie Daly
Drafted By - Maggie Daly

PLANT LEGEND

SHEET NO. GN-8

To be accompanied by Oregon Standard Dwg. Nos. TM500, TM501, TM502 TM503, TM525, TM530, TM539 and TM561.



GRAPHIC SCALE
20 0 10 20 40
1 inch = 40 ft.

L E G E N D

- (W-2) Install 8 inch white line
- (BS) Install bike lane marking
- (TWL) Install two-way left turn line
- (CW-SC) Install staggered crosswalk
- (S) Install 12" white stop bar
- (ND) Install narrow double yellow line

G E N E R A L N O T E S

1. This plan is accurate for pavement markings only.
2. Dimensions are approximate. All pavement markings shall be approved in the field by the Engineer prior to installation.
3. Remove all existing striping that conflicts with this plan.
4. Center pavement legends (arrows and bike lane symbols) within the lane.
5. See detail sheet ST-4 for striping details.
6. Type B, preformed, fused thermoplastic film shall be used for arrows, crosswalks, and stop bars outside bike lanes. Bike symbols, crosswalks, and stop bars through bike lanes should be type B-HS, preformed fused thermoplastic film high skid. Paint shall be used for all other line work.

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

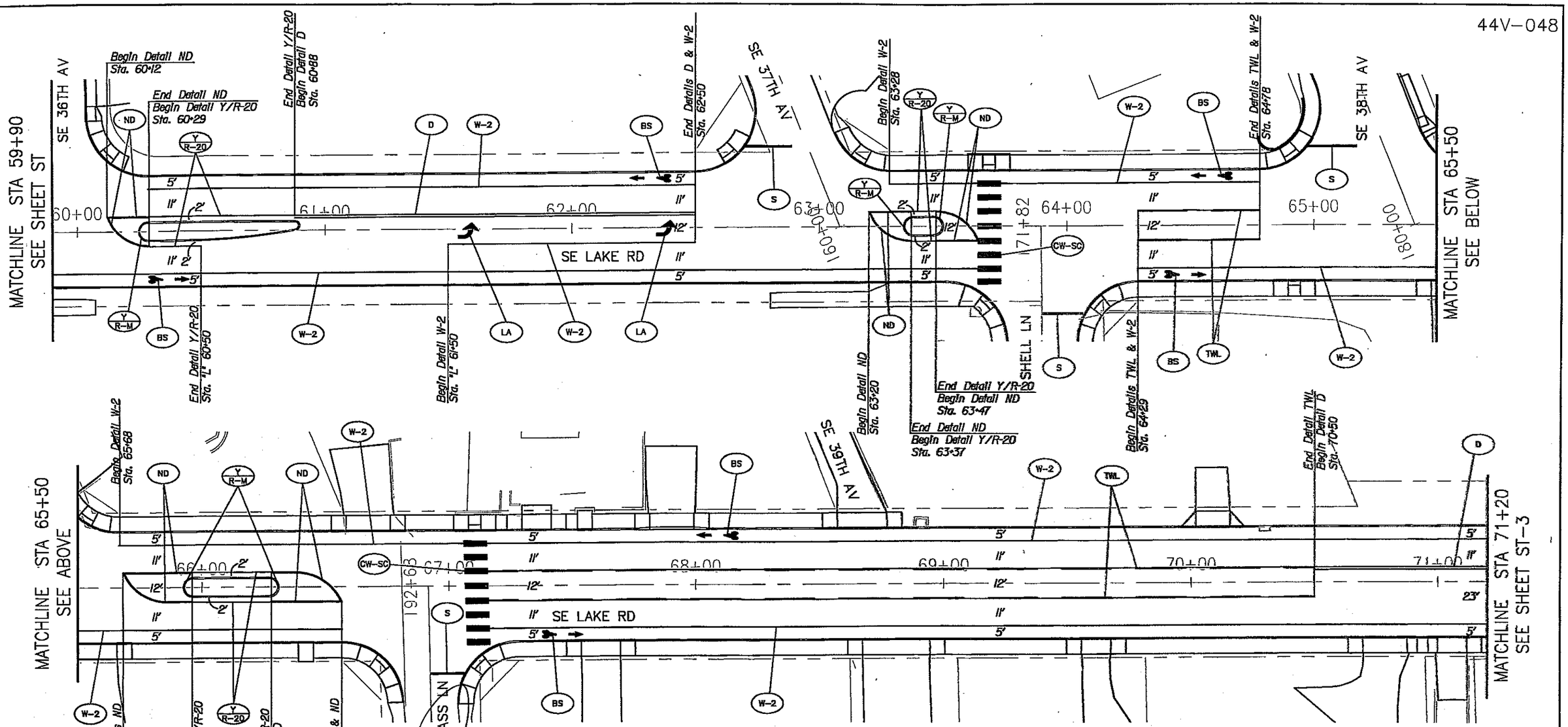
SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

PAVEMENT MARKING PLAN

SHEET NO. ST

44V-048



LEGEND

W-2	Install 8 inch white line	CW-SC	Install staggered crosswalk
BS	Install bike lane marking	S	Install 12" white stop bar
TWL	Install two-way left turn line	Y R-20	Install yellow line positioning guide
ND	Install narrow double yellow line	Y R-M	Install raised median pavement marking
D	Install double yellow line		

GENERAL NOTES

1. This plan is accurate for pavement markings only.
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GRAPHIC SCALE
20 0 10 20 40
1 inch = 40 ft.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates TRANSPORTATION SOLUTIONS
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Portland, Oregon 97201-5502 Fax: (503) 243-1934

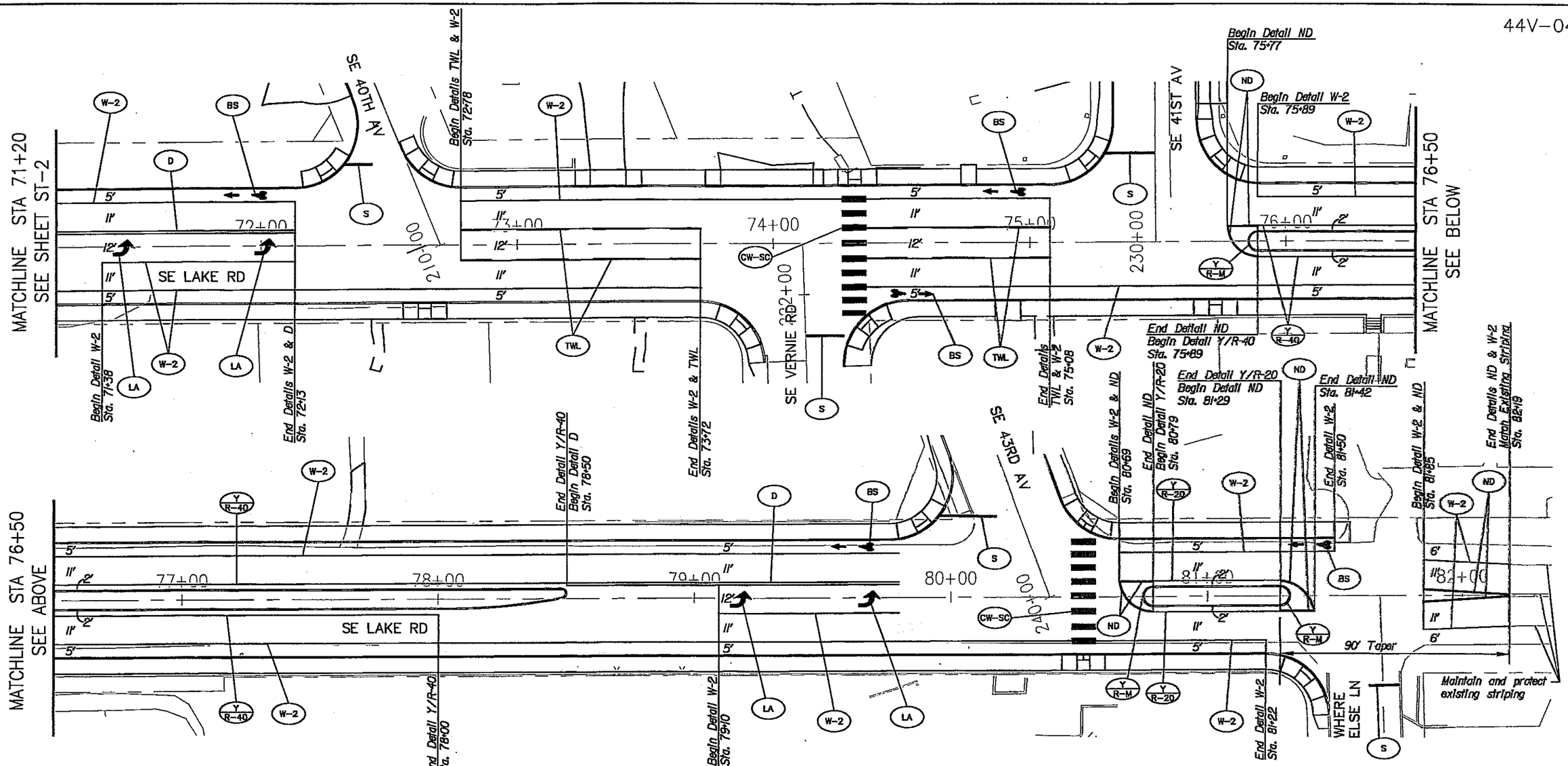
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

PAVEMENT MARKING PLAN

SHEET NO. ST-2

Jan 05, 2011 - 4:09pm
X:\Projects\30081\98031-002 (Milwaukie Lake Rd Improvements)\ACAD\98031_ST-2.dwg (Layout1 tab)



LEGEND

W-2	Install 8 inch white line
BS	Install bike lane marking
LA	Install left turn arrow
TWL	Install two-way left turn line
ND	Install narrow double yellow line
D	Install double yellow line
CW-SC	Install staggered crosswalk
S	Install 12" white stop bar
Y R-20	Install yellow line positioning guide
Y R-40	Install yellow line positioning guide
Y R-M	Install raised median pavement marking

GENERAL NOTES

1. This plan is accurate for pavement markings only.
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GRAPHIC SCALE
20 0 10 20 40
1 inch = 40 ft.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates TRANSPORTATION SOLUTIONS
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Portland, Oregon 97201-5502 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

PAVEMENT MARKING PLAN

SHEET NO. ST-3

Jan 05, 2011 - 4:09pm
X:\Projects\20081\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_ST-3.dwg (Layout1 tab)

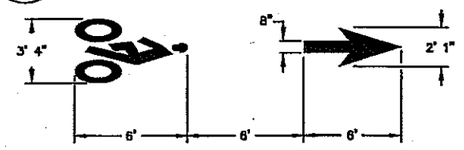
STRIPING DETAILS

44V-048

W-2

8 in WHITE LINE

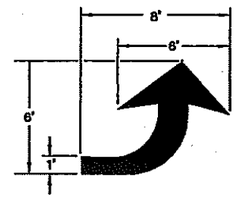
BS



BIKE LANE STANDARD STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

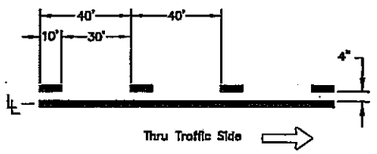
LA



LEFT TURN ARROW (white)

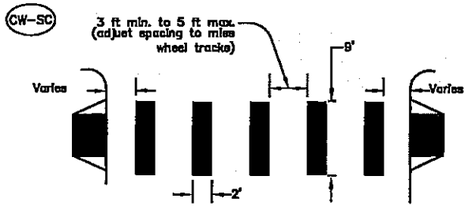
For arrow proportion details, see current version of Standard Highway Signs

TWL



TWO-WAY LEFT TURN
4" YELLOW LINES

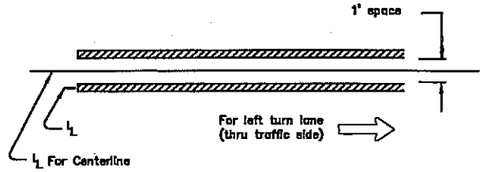
CW-SC



STAGGERED CONTINENTAL CROSSWALK
2 ft WHITE BARS

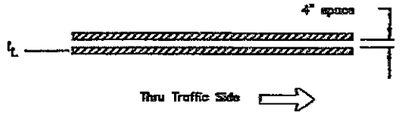
Install per Standard Drawing TM530

D



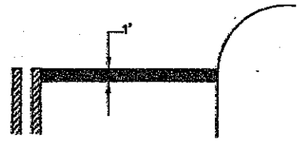
DOUBLE NO-PASS
TWO 4" YELLOW LINES

ND



NARROW DOUBLE NO-PASS
TWO 4" YELLOW LINES

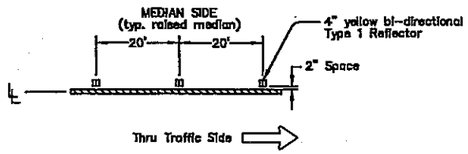
S



STOP BAR
1' WHITE BAR

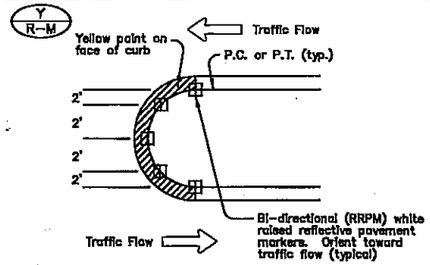
Install per Standard Drawing TM530

Y R-20



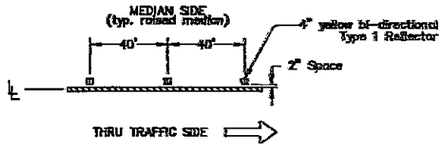
YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE

Y R-M



TYPICAL RAISED MEDIAN PAVEMENT MARKINGS

Y R-40



YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE

W

4 in WHITE LINE

℄—Lane line dimensions are shown on the striping plans.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH

EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

DKS Associates
TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Telephone: (503) 243-3500
Portland, Oregon 97201-5502 Fax: (503) 243-1934

SE LAKE RD: OATFILED RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

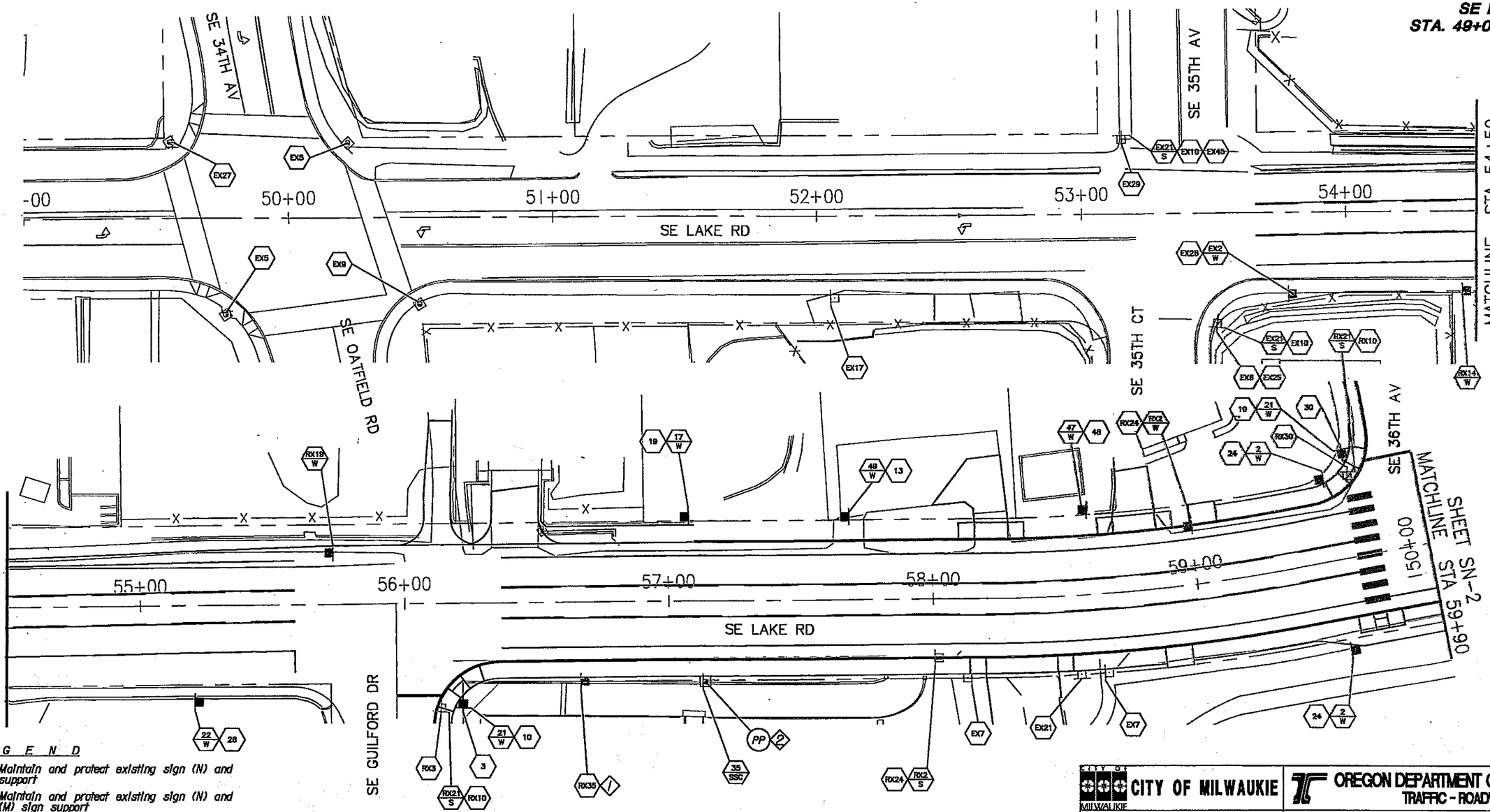
Design Team Leader – Dana M. Beckwith
Designed By – Monica T. Leal
Drafted By – DKS CAD

PAVEMENT MARKING DETAILS

SHEET NO. ST-4

Jan 05, 2011 - 6:10pm
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_ST-4.dwg (Layout1 tab)

SIGNING PLAN
SE LAKE ROAD
STA. 49+00 TO STA. 59+90



L E G E N D

- EXN — *Maintain and protect existing sign (N) and support*
- EXN M — *Maintain and protect existing sign (N) and (M) sign support*
- RXN — *Remove existing sign (N)*
- RXN M — *Remove existing sign (N) and (M) sign support*
- N — *Install new sign (N)*
- N M — *Install new sign (N) on new (M) sign support*
- PP — *Install traffic signal pedestal with frangible base (See sheet SN-9 for details)*

N = Sign Number
M = Material:
W = Wood
S = Steel
SSC = Stainless Steel Clamp

G E N E R A L N O T E S

1. *This plan is accurate for signing only.*
2. *All signs shall be approved in the field by the Engineer prior to installation.*
3. *See sheets SN-4 and SN-5 for sign details.*
4. *See sheets SN-6 thru SN-8 for sign and post data table.*

CONSTRUCTION NOTES:

1. *Remove existing flasher beacon post, flasher head and power connection. Contractor to coordinate removal and power disconnect with PGE. Contact the PGE Service Coordinators Office at 503-736-5450 (Work Order #632832).*
2. *Install solar powered school zone flasher. See sheet SN-9 for details.*

GRAPHIC SCALE
20 0 10 20 40
1 inch = 40 ft.

CITY OF MILWAUKIE
MILWAUKIE OREGON

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

DKS Associates
TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500
Portland, Oregon 97201-5502
Telephone: (503) 243-3500
Fax: (503) 243-1934

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC:OFF SYSTEM MP:

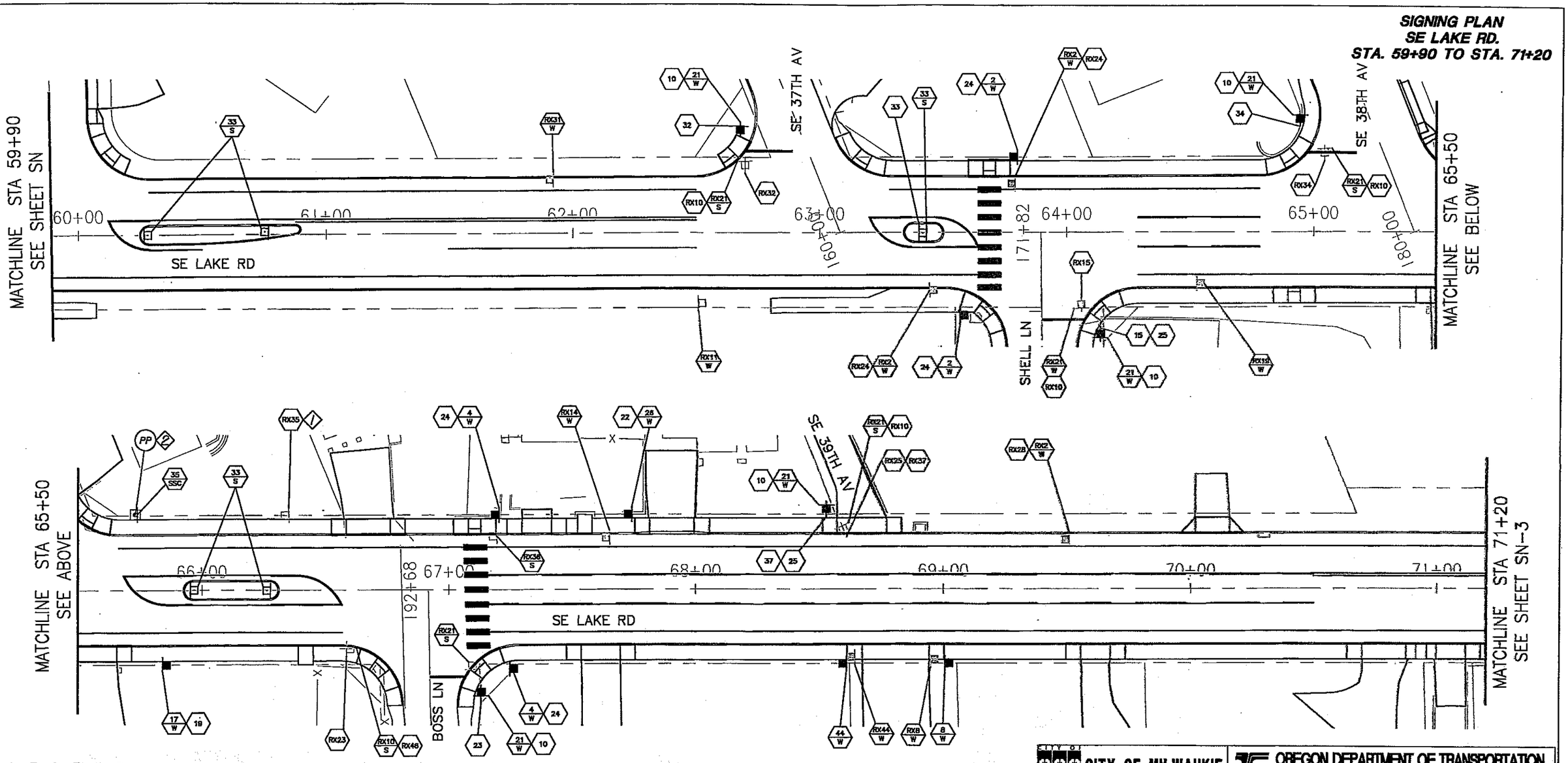
PERMANENT SIGNING

ACCOMPANIED BY DWGS. TM200, TM206, TM223, TM230, TM233, TM457, TM492, TM670, TM671, TM675, TM676, TM677, TM679 thru TM681, TM687, TM688, and T.R.S. DWG. No. T.R.S. Dwg. No. SN-2 thru SN-9.

Str. ID. No. ____ T.R.S. DWG. NO. SN

Feb 09, 2011 - 8:34am
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_SN-1.dwg

SIGNING PLAN
SE LAKE RD.
STA. 59+90 TO STA. 71+20



LEGEND

- RXN — Remove existing sign (N)
- RXN M — Remove existing sign (N) and (M) sign support
- N — Install new sign (N)
- N M — Install new sign (N) on new (M) sign support
- PP — Install traffic signal pedestal with frangible base (See sheet SN-9 for details)
- N = Sign Number
- M = Material:
  - W = Wood
  - S = Steel
  - SSC = Stainless Steel Clamp

GENERAL NOTES

1. This plan is accurate for signing only.
2. All signs shall be approved in the field by the Engineer prior to installation.
3. See sheets SN-4 and SN-5 for sign details.
4. See sheets SN-6 thru SN-8 for sign and post data table.

CONSTRUCTION NOTES:

1. Remove existing flasher beacon post, flasher head and power connection. Contractor to coordinate removal and power disconnect with PGE. Contact the PGE Service Coordinators Office at 503-736-5450 (Work Order #632830).
2. Install solar powered school zone flasher. See sheet SN-9 for details.

GRAPHIC SCALE

20 0 10 20 40

1 inch = 40 ft.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
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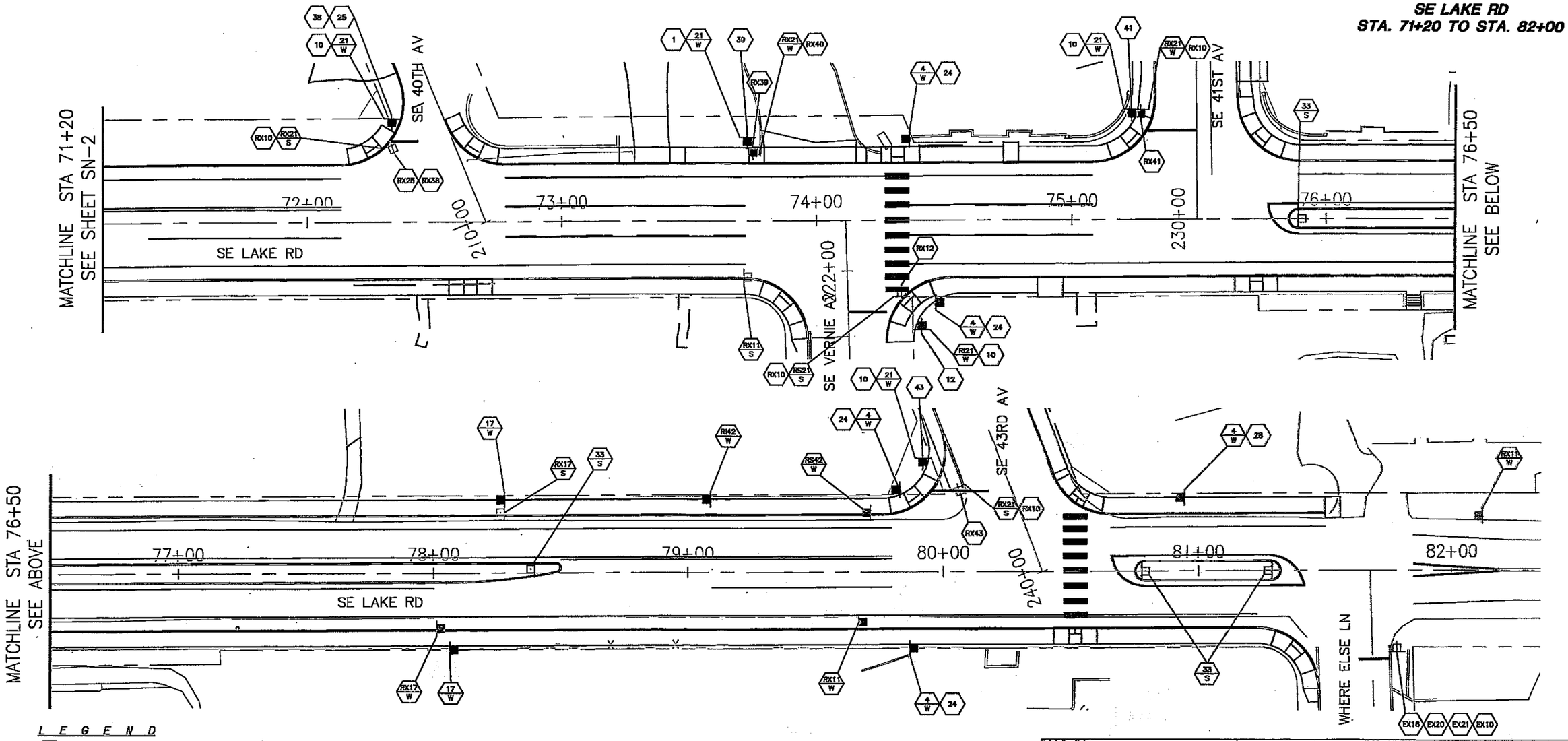
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC:OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID. No. ____ T.R.S. DWG. NO. SN-2

SIGNING PLAN
SE LAKE RD
STA. 71+20 TO STA. 82+00



L E G E N D

- EXN — *Maintain and protect existing sign (N) and support*
- RXN — *Remove existing sign (N)*
- RSN M — *Remove and save existing sign (N) and remove (M) sign support*
- RIN M — *Reinstall existing sign (N) on new (M) sign support*
- RXN M — *Remove existing sign (N) and (M) sign support*
- N — *Install new sign (N)*
- N M — *Install new sign (N) on new (M) sign support*
  - *N = Sign Number*
  - *M = Material:*
    - *W = Wood*
    - *S = Steel*

G E N E R A L N O T E S

1. *This plan is accurate for signing only.*
2. *All signs shall be approved in the field by the Engineer prior to installation.*
3. *See sheets SN-4 and SN-5 for sign details.*
4. *See sheets SN-6 thru SN-8 for sign and post data table.*

GRAPHIC SCALE

20 0 10 20 40
1 inch = 40 ft.

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DANA M. BECKWITH
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SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

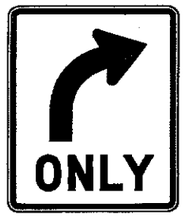
DESIGNED BY: S. Below/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC:OFF SYSTEM MP:

PERMANENT SIGNING

Str. H. No. ____ T.R.S. DWG. NO. SN-3

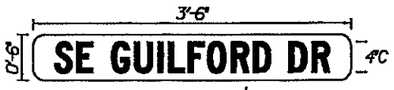
Feb 09, 2011 - 8:34am
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_SN-3.dwg

SIGNING DETAILS



SIGN NO. 1
R3-5R

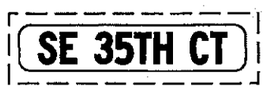
SIGN NO. 2
S1-1



SIGN NO. 3 *

SIGN NO. 4
W11-2

SIGN NO. 5



SIGN NO. 6

SIGN NO. 7

SIGN NO. 8
R6-2

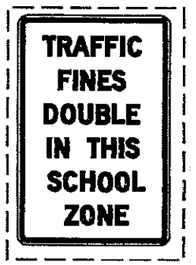
SIGN NO. 9

SIGN NO. 10 *

SIGN NO. 11

SIGN NO. 12 *

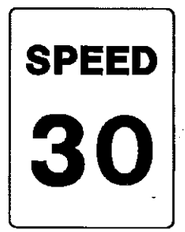
SIGN NO. 13
W16-1P



SIGN NO. 14

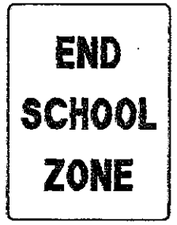
SIGN NO. 15 *

SIGN NO. 16



SIGN NO. 17
OR2-1

SIGN NO. 18
S5-2

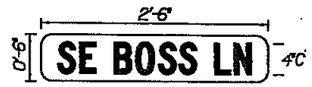


SIGN NO. 19
S5-2

SIGN NO. 20
OW14-2a

SIGN NO. 21
R1-1

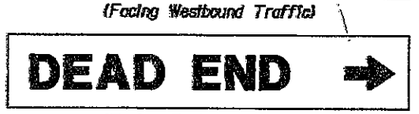
SIGN NO. 22
S4-3P



SIGN NO. 23 *

SIGN NO. 24
W16-7P

(Facing Westbound Traffic)



(Facing Eastbound Traffic)

SIGN NO. 25 *
OW14-1a

* Double sided sign

NOTE:
SIGNS WITH BROKEN BORDER ARE EXISTING SIGNS.

CITY OF MILWAUKIE

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SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC: OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID. No. _____ T.R.S. DWG. NO. SN-4

SIGNING DETAILS

SIGN NO. 26
OS5-3

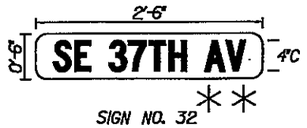
SIGN NO. 27

SIGN NO. 28
W16-9P

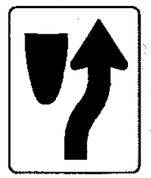
SIGN NO. 29

SIGN NO. 30 **

SIGN NO. 31
R4-1



SIGN NO. 32 **



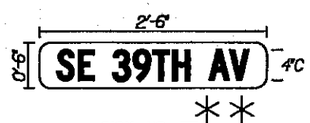
SIGN NO. 33
R4-7

SIGN NO. 34 **

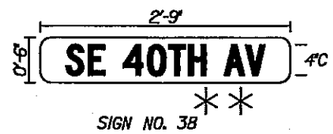
(35a)

SIGN NO. 35 *
S5-1
(Assembly)

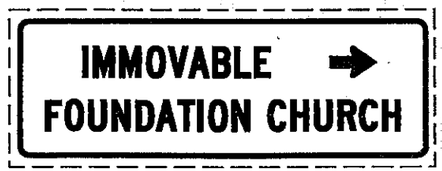
SIGN NO. 36
D13-1



SIGN NO. 37 **



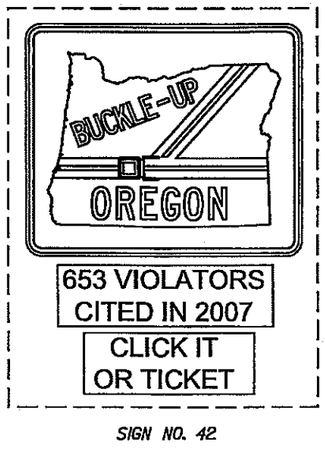
SIGN NO. 38 **



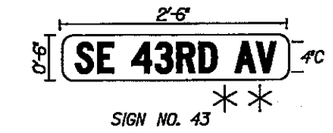
SIGN NO. 39

SIGN NO. 40

SIGN NO. 41 **

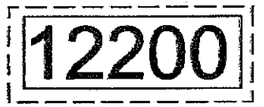


SIGN NO. 42

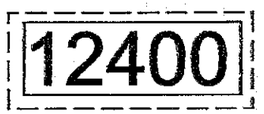


SIGN NO. 43 **

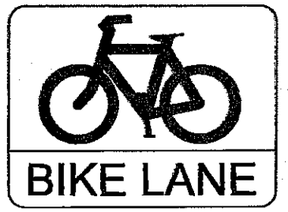
SIGN NO. 44
R6-2



SIGN NO. 45



SIGN NO. 46



SIGN NO. 47
R3-17

SIGN NO. 48
R3-17bP

SIGN NO. 49
W1-11

* Sign to be installed on new flasher beacon post.

** Double sided sign

NOTE:
SIGNS WITH BROKEN BORDER ARE EXISTING SIGNS.

CITY OF MILWAUKIE

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

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SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC: OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID. No. ____ T.R.S. DWG. NO. SN-5

SIGN AND POST DATA TABLE

SIGN NO.	SIGN LOCATION 4_/	SIGN DIMENSIONS		BORDER WIDTH			RADIUS						ARROW SIZE	SIGN TYPE	SUB-STRATE			COLOR 1_/					LEGEND TYPE		SIGN NO. 2_/	TYPE OF SUPPORT																					POST		FOOTING		REFER TO OREGON STANDARD DRAWING														REMARKS
																		BACK-GROUND		LEGEND																							SECONDARY SIGN SUPPORT																				
		WIDTH (IN.)	HEIGHT (IN.)	1/2"	1"	2"	1 1/2"	3"	6"	9"	12"			(PER SEC. 940 SPEC. PROVISIONS)	PLYWOOD	SHEET ALUM.	EXTRUDED ALUMINUM	ASTM TYPE III OR TYPE IV	ASTM TYPE IX	ASTM TYPE III OR TYPE IV	ASTM TYPE VII OR TYPE IX	NON-REFLECTIVE	PERMANENT	REMOVABLE		WOOD POST	SQUARE TUBE SIGN SUPPORT	TRIANGULAR BASE BREAKAWAY	MULTI-POST BREAKAWAY	STAINLESS STEEL CLAMP (SSC)	SIGNAL POLE MOUNT	BRIDGE RAIL MOUNT	STRUCTURE MOUNT	FLASHER BEACON POST	SIGN BRIDGE	EXIT NUMBER SIGN SUPPORT	"H" FRAME	ROUTE MARKER FRAME	MILEPOST MARKER POST	ADJUSTABLE SIGN MOUNT	C 4 X 5.4	C 4 X 7.25	LENGTH (FT.)	SIZE (IN.) (BASED ON ESTIMATED LENGTH)	LENGTH (FT.) (MUST BE FIELD VERIFIED)	LOCATION 3_/	MIN. DEPTH (FT.) 5_/	TM600 & 601	TM602	TM635	TM670	TM675	TM676	TM677	TM679	TM680	TM681 & TM687	TM200 & 201	TM206	TM223	SEE SPECIAL PROVISIONS FOR SIGN BRACKET DETAILS	
1	73+75 L	30	36											W1		X		SW				BK	X		1																												X				X							X	X		MUTCD R3-5R. Install below Sign N.21
2	59+52 R	36	36											Y5		X			FY			BK	X		2	X																									4"x6"	18'-0"						X		X					X	X		MUTCD S1-1
	59+50 L	36	36											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD S1-1
	63+80 L	36	36											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD S1-1
	63+58 R	36	36											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD S1-1
3	56+21 R	42	6				X							G		X		G		SW			X		3																																X				X							X		X	Install above Sign N. 21.
4	67+20 L	30	30											Y5		X			FY			BK	X		4	X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	67+25 R	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	74+35 L	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	74+50 R	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	79+85 L	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	79+88 R	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
	80+95 L	30	30											Y5		X			FY			BK	X			X																									4"x6"	18'-0"						X		X					X	X		MUTCD W11-2
8	69+02 R	24	30											W1		X		SW				BK	X		8	X																									4"x4"	16'-0"						X		X					X	X		MUTCD R8-2
10	56+21 R	30	6				X							G		X		G		SW			X		10																																X				X							X		X	Install above Sign N. 3.
	59+65 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 30.
	62+70 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 32.
	64+13 R	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 25.
	64+95 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 34.
	67+12 R	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 23.
	68+54 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 25.
	72+33 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 25.
	74+40 R	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 12.
	75+25 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 41.
	79+94 L	30	6				X							G		X		G		SW			X																																		X				X							X		X	Install above Sign N. 43.
12	74+40 R	36	6											G		X		G		SW			X		12																																X				X							X		X	Install above Sign N. 21.
13	57+65 L	18	24											Y1		X		Y				BK	X		50																																X				X							X	X		MUTCD W16-1P. Install on sign 49 support.
15	64+13 R	36	6				X							G		X		G		SW			X		15																																X				X							X		X	Install above Sign N. 10.

1_/BK=BLACK
BL=BLUE
BR=BROWN
G=GREEN
O=ORANGE
R=RED
RB=RED-BLUE
SW=SILVER-WHITE
Y=YELLOW
YG=YELLOW-GREEN
W=WHITE
RG=RED-GREEN
FY=FLUORESCENT-YELLOW

2_/NOTE: L,C,R ARE LOCATIONS OF POSTS FACING THE SIGN.
L=LEFT POST
C=CENTER POST
R=RIGHT POST

3_/DISTANCE FROM FACE OF CURB TO THE CENTERLINE OF THE NEAREST FOOTING.

4_/NOTE: THE LOCATIONS SHOWN ARE APPROXIMATE EXCEPT FOR SPEED ZONES, SCHOOL ZONES AND MILEPOST MARKERS. EXACT LOCATIONS ARE TO BE DETERMINED BY THE ENGINEER.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

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TRAFFIC - ROADWAY SECTION

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SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boise/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC: OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID. No. ____ T.R.S. DWG. NO. SN-6

SIGN AND POST DATA TABLE

SIGN NO.	SIGN LOCATION 4_/	SIGN DIMENSIONS WIDTH (IN.)	SIGN DIMENSIONS HEIGHT (IN.)	BORDER WIDTH 1/2"	BORDER WIDTH 1"	BORDER WIDTH 2"	RADIUS 1 1/2"	RADIUS 3"	RADIUS 6"	RADIUS 9"	RADIUS 12"	ARROW SIZE	SIGN TYPE (PER SEC. 940 SPEC. PROVISIONS)	SUB-STRATE PLYWOOD	SUB-STRATE SHEET ALUM.	SUB-STRATE EXTRUDED ALUMINUM	COLOR 1_/ BACK-GROUND ASTM TYPE III OR TYPE IV	COLOR 1_/ BACK-GROUND ASTM TYPE IX	COLOR 1_/ LEGEND ASTM TYPE III OR TYPE IV	COLOR 1_/ LEGEND ASTM TYPE VII OR TYPE IX	COLOR 1_/ LEGEND NON-REFLECTIVE	LEGEND TYPE PERMANENT	LEGEND TYPE REMOVABLE	SIGN NO. 2_/	TYPE OF SUPPORT WOOD POST	SQUARE TUBE SIGN SUPPORT	TRIANGULAR BASE BREAKAWAY	MULTI-POST BREAKAWAY	STAINLESS STEEL CLAMP (SSC)	SIGNAL POLE MOUNT	BRIDGE RAIL MOUNT	STRUCTURE MOUNT	FLASHER BEACON POST	SIGN BRIDGE	EXIT NUMBER SIGN SUPPORT	"H" FRAME	ROUTE MARKER FRAME	MILEPOST MARKER POST	ADJUSTABLE SIGN MOUNT	SECONDARY SIGN SUPPORT C 4 X 5.4	SECONDARY SIGN SUPPORT C 4 X 7.25	SECONDARY SIGN SUPPORT LENGTH (FT.)	POST SIZE (IN.) (BASED ON ESTIMATED LENGTH)	POST LENGTH (FT.) (MUST BE FIELD VERIFIED)	FOOTING LOCATION 3_/	FOOTING MIN. DEPTH (FT.) 5_/	REFER TO OREGON STANDARD DRAWING TM600 & 601	TM602	TM635	TM670	TM675	TM676	TM677	TM679	TM680	TM681, TM687 & TM688	TM200 & 201	TM206	TM223	SEE SPECIAL PROVISIONS FOR SIGN BRACKET DETAILS	REMARKS
17	78+26 L	30	36										W1		X		SW				BK	X		17	X																			4"x6"	16'-0"						X		X					X	X		ODOT OR2-1
	78+08 R	30	36										W1		X		SW				BK	X			X																			4"x6"	16'-0"						X		X					X	X		ODOT OR2-1
	57+15 L	30	36										W1		X		SW				BK	X			X																			6"X6"	20'-0"						X		X					X	X		ODOT OR2-1
	65+75 R	30	36										W1		X		SW				BK	X			X																			6"X6"	20'-0"						X		X					X	X		ODOT OR2-1
19	57+15 L	24	30										W1		X		SW				BK	X		19	X																			4"x4"	16'-0"						X		X					X	X		MUTCD S5-2. Install below sign N. 17
	65+75 R	24	30										W1		X		SW				BK	X			X																			4"x4"	16'-0"						X		X					X	X		MUTCD S5-2. Install below sign N. 17
21	56+21 R	30	30										R		X		R		SW			X		21	X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	59+65 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	62+70 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	64+13 R	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	64+95 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	67+12 R	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	68+54 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	72+33 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	73+75 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
	74+40 R	30	30										Existing												X																			6"x6"	20'-0"						X		X					X	X		MUTCD R1-1
	75+25 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		REINSTALL EXISTING SIGN
	79+94 L	30	30										R		X		R		SW			X			X																			4"x6"	18'-0"						X		X					X	X		MUTCD R1-1
22	55+20 R	24	8										Y5		X				FY			BK	X	22	X																			4"x4"	16'-0"						X		X					X	X		MUTCD S4-3
	67+70 L	24	8										Y5		X				FY			BK	X		X																			4"x4"	16'-0"						X		X					X	X		MUTCD S4-4
23	67+12 R	30	6				X						G		X		G		SW			X		23																										X		X					X			X	Install above Sign N.21.
24	59+52 R	24	12										Y5		X				FY			BK	X	24																										X		X					X	X		ODOT W16-7p. Install below Sign N.2.
	59+50 L	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.2.
	63+80 L	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.2.
	63+58 R	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.2.
	67+20 L	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
	67+25 R	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
	74+35 L	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
	74+50 R	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
	79+85 L	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
	79+88 R	24	12										Y5		X				FY			BK	X																										X		X					X	X		ODOT W16-7p. Install below Sign N.4.
25	64+13 R	45	9										Y1		X		Y					BK	X																										X		X					X	X		ODOT OW14-1A. Install above Sign N.21.
	68+54 L	45	9										Y1		X		Y					BK	X	25																										X		X					X	X		ODOT OW14-1A. Install above Sign N.21.
	72+33 L	45	9										Y1		X		Y					BK	X																										X		X					X	X		ODOT OW14-1A. Install above Sign N.21.
26	55+20 R	24	24										W1		X		SW					BK	X	26																										X		X					X	X		ODOT OS5-3. Install below Sign N. 22
	67+70 L	24	24										W1		X		SW					BK	X																										X		X					X	X		ODOT OS5-3. Install below Sign N. 22

1_/ BK=BLACK
BL=BLUE
BR=BROWN
G=GREEN
O=ORANGE
R=RED
RB=RED-BLUE
SW=SILVER-WHITE
Y=YELLOW
YG=YELLOW-GREEN
W=WHITE
RG=RED-GREEN
FY=FLUORESCENT-YELLOW

2_/ NOTE: L,C,R ARE LOCATIONS OF POSTS FACING THE SIGN.
L=LEFT POST
C=CENTER POST
R=RIGHT POST

3_/ DISTANCE FROM FACE OF CURB TO THE CENTERLINE OF THE NEAREST FOOTING.

4_/ NOTE: THE LOCATIONS SHOWN ARE APPROXIMATE EXCEPT FOR SPEED ZONES, SCHOOL ZONES AND MILEPOST MARKERS. EXACT LOCATIONS ARE TO BE DETERMINED BY THE ENGINEER.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

DKS Associates TRANSPORTATION SOLUTIONS
1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502
Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC:OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID. No. _____ T.R.S. DWG. NO. SN-7

SIGN AND POST DATA TABLE

SIGN NO.	SIGN LOCATION 4_/	SIGN DIMENSIONS WIDTH (IN.)	SIGN DIMENSIONS HEIGHT (IN.)	BORDER WIDTH 1/2"	BORDER WIDTH 1"	BORDER WIDTH 2"	RADIUS 1 1/2"	RADIUS 3"	RADIUS 6"	RADIUS 9"	RADIUS 12"	ARROW SIZE	SIGN TYPE (PER SEC. 940 SPEC. PROVISIONS)	SUBSTRATE PLYWOOD	SUBSTRATE SHEET ALUM.	SUBSTRATE EXTRUDED ALUMINUM	COLOR 1_/ BACKGROUND ASTM TYPE III OR TYPE IV	COLOR 1_/ BACKGROUND ASTM TYPE IX	COLOR 1_/ LEGEND ASTM TYPE III OR TYPE IV	COLOR 1_/ LEGEND ASTM TYPE VII OR TYPE IX	COLOR 1_/ LEGEND NON-REFLECTIVE	LEGEND TYPE PERMANENT	LEGEND TYPE REMOVABLE
28	80+95 L	24	12										Y5		X			FY			BK	X	
30	59+65 L	30	6				X						G		X		G		SW			X	
32	62+70 L	30	6				X						G		X		G		SW			X	
33	60+28	24	30										W1		X		SW				BK	X	
	60+75	24	30										W1		X		SW				BK	X	
	63+42	24	30										W1		X		SW				BK	X	
	63+42	24	30										W1		X		SW				BK	X	
	65+97	24	30										W1		X		SW				BK	X	
	66+26	24	30										W1		X		SW				BK	X	
	75+91	24	30										W1		X		SW				BK	X	
	78+38	24	30										W1		X		SW				BK	X	
	80+79	24	30										W1		X		SW				BK	X	
	81+27	24	30										W1		X		SW				BK	X	
34	64+95 L	30	6				X						G		X		G		SW			X	
35	57+15 R	24	40										W1		X		SW				BK	X	
35a	57+15 R	24	8										Y5		X			FY			BK	X	
35	65+75 L	24	40										W1		X		SW				BK	X	
35a	65+75 L	24	8										Y5		X			FY			BK	X	
37	68+54 L	30	6				X						G		X		G		SW			X	
38	72+33 L	33	6				X						G		X		G		SW			X	
41	75+25 L	30	6				X						G		X		G		SW			X	
42	79+08 L	36	56										Existing										
43	79+94 L	30	6				X						G		X		G		SW			X	
44	68+58 R	24	30										W1		X		SW				BK	X	
47	58+60 L	24	18										W1		X		SW				BK	X	
48	58+60 L	24	8										W1		X		SW				BK	X	
49	57+65 L	30	30										Y1		X		Y				BK	X	

SIGN NO.	SIGN LOCATION 4_/	SIGN NO. 2_/	TYPE OF SUPPORT: WOOD POST	SQUARE TUBE SIGN SUPPORT	TRIANGULAR BASE BREAKAWAY	MULTI-POST BREAKAWAY	STAINLESS STEEL CLAMP (SSC)	SIGNAL POLE MOUNT	BRIDGE RAIL MOUNT	STRUCTURE MOUNT	FLASHER BEACON POST	SIGN BRIDGE	EXIT NUMBER SIGN SUPPORT	"H" FRAME	ROUTE MARKER FRAME	MILEPOST MARKER POST	ADJUSTABLE SIGN MOUNT	SECONDARY SIGN SUPPORT C 4 X 5.4	SECONDARY SIGN SUPPORT C 4 X 7.25	SECONDARY SIGN SUPPORT LENGTH (FT.)	POST SIZE (IN.) (BASED ON ESTIMATED LENGTH)	POST LENGTH (FT.) (MUST BE FIELD VERIFIED)	FOOTING LOCATION 3_/	FOOTING MIN. DEPTH (FT.)
28	80+95 L	28																						
30	59+65 L	30																						
32	62+70 L	32																						
33	60+28	33		X																	2X2 (12 ga)	11'-6"		2'-9.25"
	60+75			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	63+42			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	63+42																							
	65+97			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	66+26			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	75+91			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	78+38			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	80+79			X																	2X2 (12 ga)	11'-6"		2'-9.25"
	81+27			X																	2X2 (12 ga)	11'-6"		2'-9.25"
34	64+95 L	34																						
35	57+15 R	35									X													
35a	57+15 R																							
35	65+75 L										X													
35a	65+75 L																							
37	68+54 L	37																						
38	72+33 L	38																						
41	75+25 L	41																						
42	79+08 L		X																		6"x6"	18"-0"		
43	79+94 L	43																						
44	68+58 R	44	X																		4"x4"	16'-0"		
47	58+60 L	47	X																		4"x4"	16'-0"		
48	58+60 L	48																			4"x4"	16'-0"		
49	57+65 L	49	X																		4"x6"	18'-0"		

SIGN NO.	SIGN LOCATION 4_/	REFER TO OREGON STANDARD DRAWING: TM600 & 601	TM602	TM635	TM670	TM675	TM676	TM677	TM679	TM680	TM681 & TM687	TM200 & 201	TM206	TM223	SEE SPECIAL PROVISIONS FOR SIGN BRACKET DETAILS	REMARKS
28	80+95 L				X		X					X	X			MUTCD W16-9p. Install below Sign N.4.
30	59+65 L				X		X					X			X	Install above Sign N. 21.
32	62+70 L				X		X					X			X	Install above Sign N. 21.
33	60+28						X				X	X	X			MUTCD R4-7
	60+75						X				X	X	X			MUTCD R4-7
	63+42						X				X	X	X			MUTCD R4-7
	63+42						X				X	X	X			MUTCD R4-7. Install on Sign 33 support.
	65+97						X				X	X	X			MUTCD R4-7
	66+26						X				X	X	X			MUTCD R4-7
	75+91						X				X	X	X			MUTCD R4-7
	78+38						X				X	X	X			MUTCD R4-7
	80+79						X				X	X	X			MUTCD R4-7
	81+27						X				X	X	X			MUTCD R4-7
34	64+95 L				X		X					X			X	Install above Sign N. 21.
35	57+15 R															MUTCD S5-1. Install on new flasher beacon post.
35a	57+15 R															MUTCD S5-1. "SCHOOL" section. Install on new flasher beacon post.
35	65+75 L															MUTCD S5-1. Install on new flasher beacon post.
35a	65+75 L															MUTCD S5-1. "SCHOOL" section. Install on new flasher beacon post.
37	68+54 L				X		X					X			X	Install above Sign N.10.
38	72+33 L				X		X					X			X	Install above Sign N.10.
41	75+25 L				X		X					X			X	Install above Sign N. 21.
42	79+08 L				X		X					X	X			"HEIGHT" includes complete asembly. Reinstall existing sign assembly.
43	79+94 L				X		X					X			X	Install above Sign N. 21.
44	68+58 R				X		X					X	X			MUTCD R6-2
47	58+60 L				X		X					X	X			MUTCD R3-17
48	58+60 L				X		X					X	X			MUTCD R3-17bP. Install on sign 47 support.
49	57+65 L				X		X					X	X			MUTCD W11-1

1_/ BK=BLACK
BL=BLUE
BR=BROWN
G=GREEN
O=ORANGE
R=RED
RB=RED-BLUE
SW=SILVER-WHITE
Y=YELLOW
YG=YELLOW-GREEN
W=WHITE
RG=RED-GREEN
FY=FLUORESCENT-YELLOW

2_/NOTE: L,C,R ARE LOCATIONS OF POSTS FACING THE SIGN.
L=LEFT POST
C=CENTER POST
R=RIGHT POST

3_/DISTANCE FROM FACE OF CURB TO THE CENTERLINE OF THE NEAREST FOOTING.

4_/NOTE: THE LOCATIONS SHOWN ARE APPROXIMATE EXCEPT FOR SPEED ZONES, SCHOOL ZONES AND MILEPOST MARKERS. EXACT LOCATIONS ARE TO BE DETERMINED BY THE ENGINEER.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER 53,044 OREGON JANUARY 15, 2002 DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

DKS Associates TRANSPORTATION SOLUTIONS 1400 SW Fifth Avenue, Suite 500 Portland, Oregon 97201-5502 Telephone: (503) 243-3500 Fax: (503) 243-1934

SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

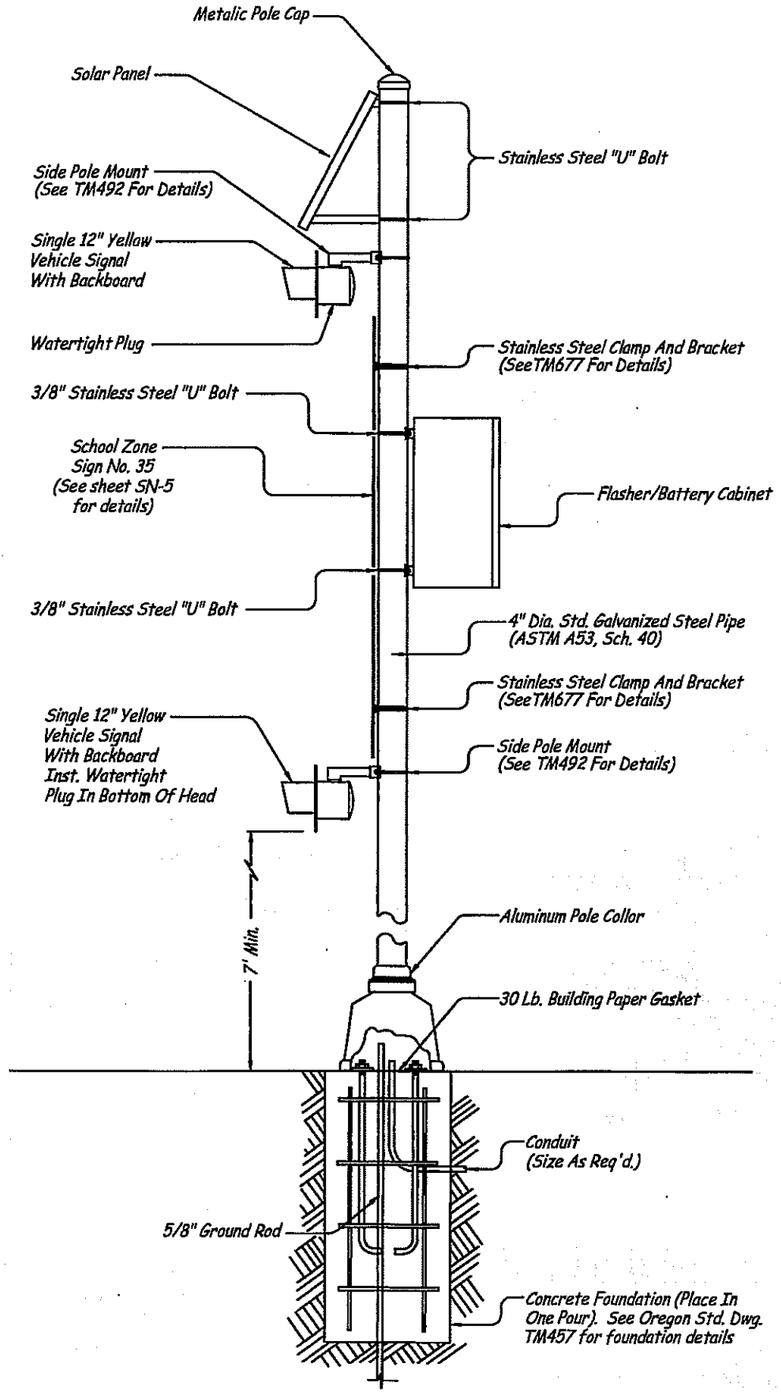
DESIGNED BY: S. Bolce/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC: OFF SYSTEM MP:

PERMANENT SIGNING

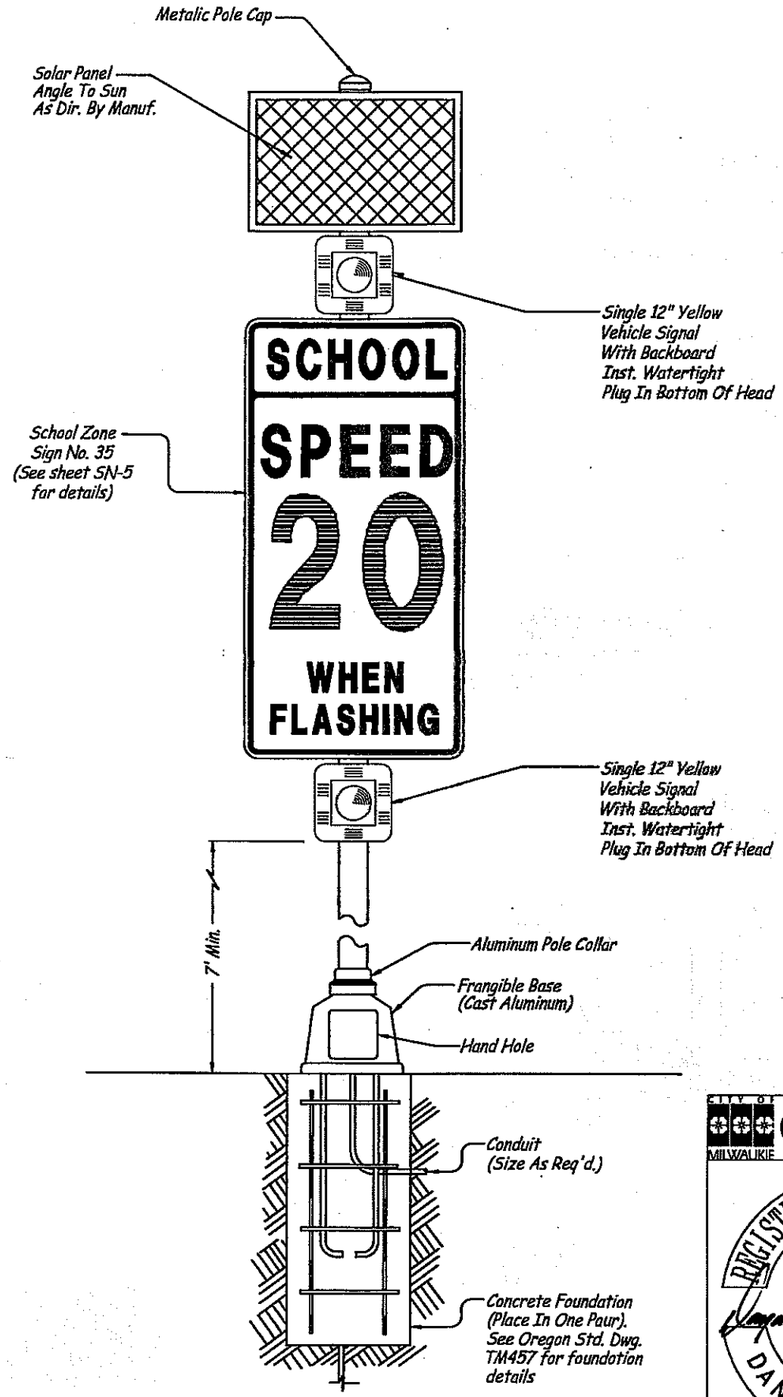
Str. ID. No. ______ T.R.S. DWG. NO. SN-8

Feb 09, 2011 - 8:34am
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_SN-8.dwg

SOLAR POWERED SCHOOL ZONE FLASHER



SCHOOL ZONE FLASHER



SCHOOL ZONE FLASHER

NOTE:
Refer to ODOT Green Sheets for accepted school zone and activated solar flasher beacon equipment for this project.

CITY OF MILWAUKIE

REGISTERED PROFESSIONAL ENGINEER
53,044
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

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TRANSPORTATION SOLUTIONS
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Portland, Oregon 97201-5502
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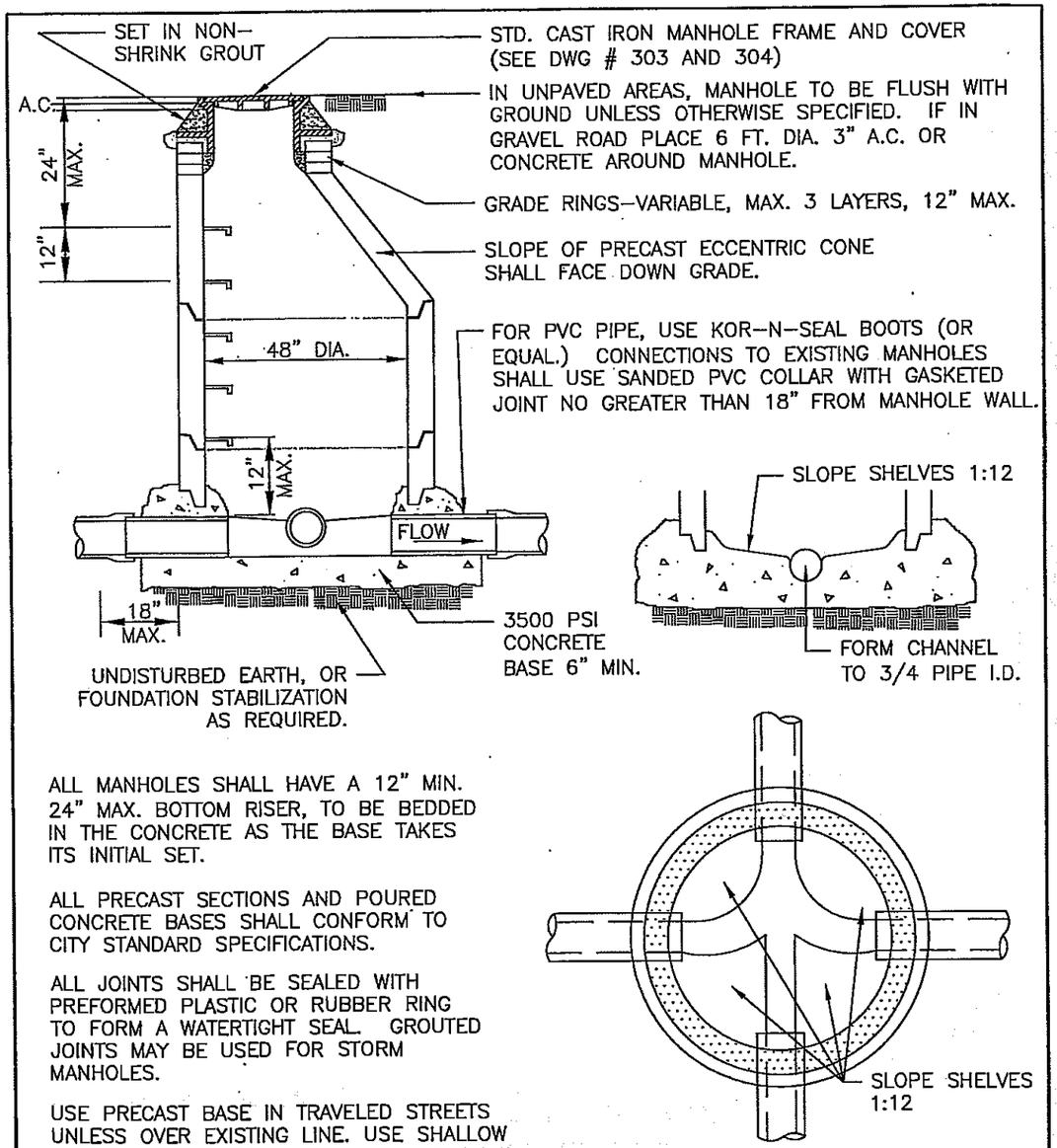
SE LAKE RD: OATFIELD RD - WHERE ELSE LN (MILWAUKIE)
SE LAKE ROAD
CLACKAMAS COUNTY

DESIGNED BY: S. Boice/M. Leal
REVIEWED BY: D. Beckwith
DRAWN BY: DKS CAD
FC:OFF SYSTEM MP:

PERMANENT SIGNING

Str. ID No. _____ T.R.S. DWG. NO. SN-9

Jan 05, 2011 - 4:09pm
X:\Projects\2008\P08031-002 (Milwaukie Lake Rd Improvements)\ACAD\08031_SN-9.dwg



ALL MANHOLES SHALL HAVE A 12" MIN. 24" MAX. BOTTOM RISER, TO BE BEDDED IN THE CONCRETE AS THE BASE TAKES ITS INITIAL SET.

ALL PRECAST SECTIONS AND POURED CONCRETE BASES SHALL CONFORM TO CITY STANDARD SPECIFICATIONS.

ALL JOINTS SHALL BE SEALED WITH PREFORMED PLASTIC OR RUBBER RING TO FORM A WATERTIGHT SEAL. GROUTED JOINTS MAY BE USED FOR STORM MANHOLES.

USE PRECAST BASE IN TRAVELED STREETS UNLESS OVER EXISTING LINE. USE SHALLOW MANHOLE DETAIL FOR DEPTHS LESS THAN 5 FEET.

PLAN VIEW

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

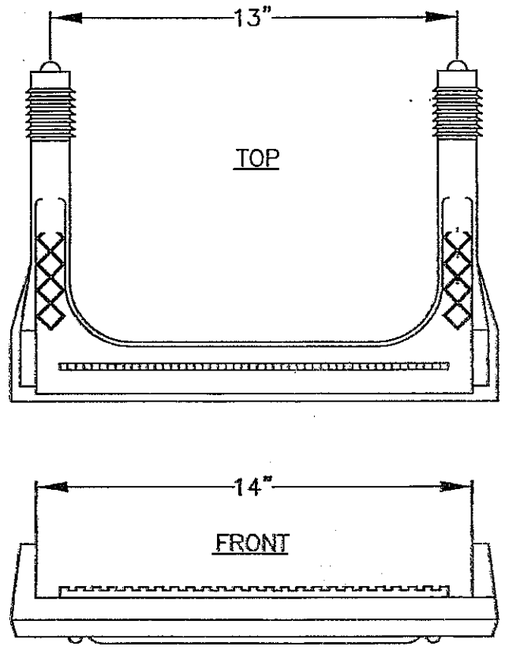
Standard Manhole for <27" Pipe

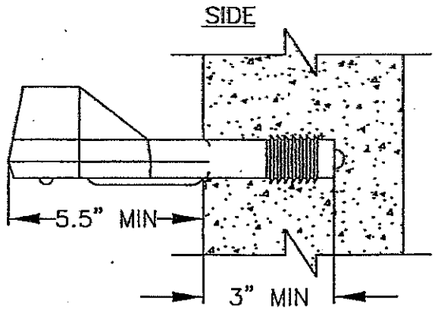
DRAWING NO. 300

APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	FORMATTING, ADDED DRAWING REFERENCE	12/10	MCP

DEC 2010





NOTES:

1. STEPS SHALL BE DEFORMED STEEL REINFORCED POLYPROPYLENE PLASTIC CONFORMING WITH ASTM C478 AND ASTM A615.
2. ALL STEPS WITHIN A MANHOLE SHALL BE OF THE SAME DESIGN TYPE AND SIZE. (MIXING OF UNMATCHED STEPS WITHIN THE SAME MANHOLE IS NOT PERMITTED.)
3. LOOSE STEPS SHALL BE CAUSE FOR REJECTION OF THAT CONE OR SECTION.
4. STEPS ARE TO BE DRIVEN INTO PRE–FORMED HOLES IN PRECAST CONCRETE SECTIONS BY THE MANHOLE MANUFACTURER PRIOR TO DELIVERY TO THE JOB SITE.
5. MINIMUM HORIZONTAL PULLOUT LOAD SHALL BE 1500 LBS.
6. STEPS SHALL BE ALIGNED VERTICALLY.
7. STEPS SHALL BE SPACED 12" O.C.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

Manhole Step

DRAWING NO. 305

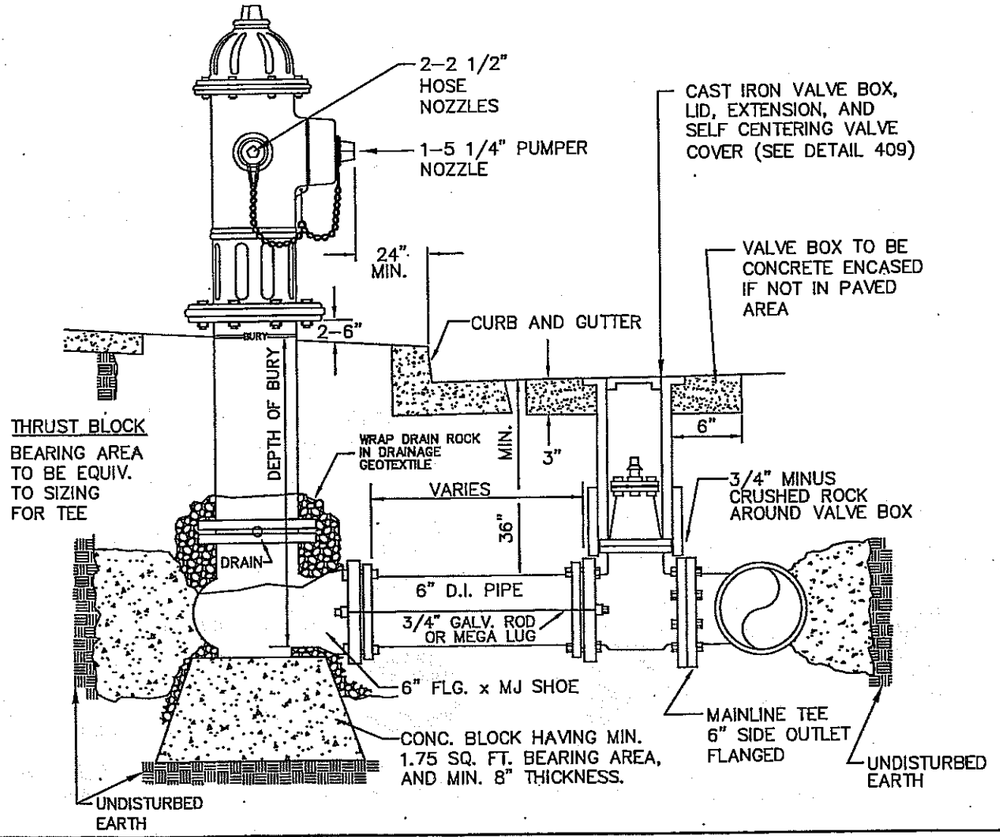
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY

DEC 2010

NOTES:

1. HYDRANTS TO BE WATEROUS WB67, MUELLER CENTURION A423, OR CLOW MEDALLION F2545 WITH 1 1/2" OPER. NUTS.
2. HYDRANT COLOR TO BE MILLER EQUIP. ENAMEL OE 40 (SAFETY YELLOW).
3. JOINTS TO BE RESTRAINED BY 3/4" DIA. GALVANIZED STEEL RODS AND THRUST BLOCKS OR MEGA LUGS AND THRUST BLOCKS.
4. ALL FITTINGS IN CONTACT W/CONCRETE SHALL BE WRAPPED IN PLASTIC. HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL.
5. MIN. 4 CU. FT. OF 2"– 1" CLEAN DRAIN ROCK SHALL BE PLACED AROUND SHOE UP TO A MIN. OF 6" ABOVE DRAIN OUTLETS.
6. WHERE PLANTER STRIP EXISTS, HYDRANT SHALL BE PLACED SO FRONT PORT IS A MINIMUM OF 24" BEHIND FACE OF CURB.
7. WHERE INTEGRAL S/W & CURB EXISTS, HYD. SHALL BE PLACED AT BACK OF SIDEWALK, OR AS DIRECTED BY ENGINEER.
8. BURY OF HYDRANT SHALL BE MEASURED FROM FINISHED GRADE TO BOTTOM OF CONNECTING PIPE.
9. THRUST BLOCK AT FIRE HYDRANT TEE SHALL HAVE A 3.7 SQ. FT. BEARING AREA.
10. HYDRANT VALVE SHALL BE AMERICAN FLOW CONTROL SERIES 2500 OR APPROVED EQUAL.
11. WHERE NO SIDEWALK EXISTS, PLACE A 5'x 5'x 4" THICK CONCRETE APRON AROUND HYDRANT.
12. NO VERTICAL EXTENSIONS ALLOWED WITHOUT APPROVAL.



CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

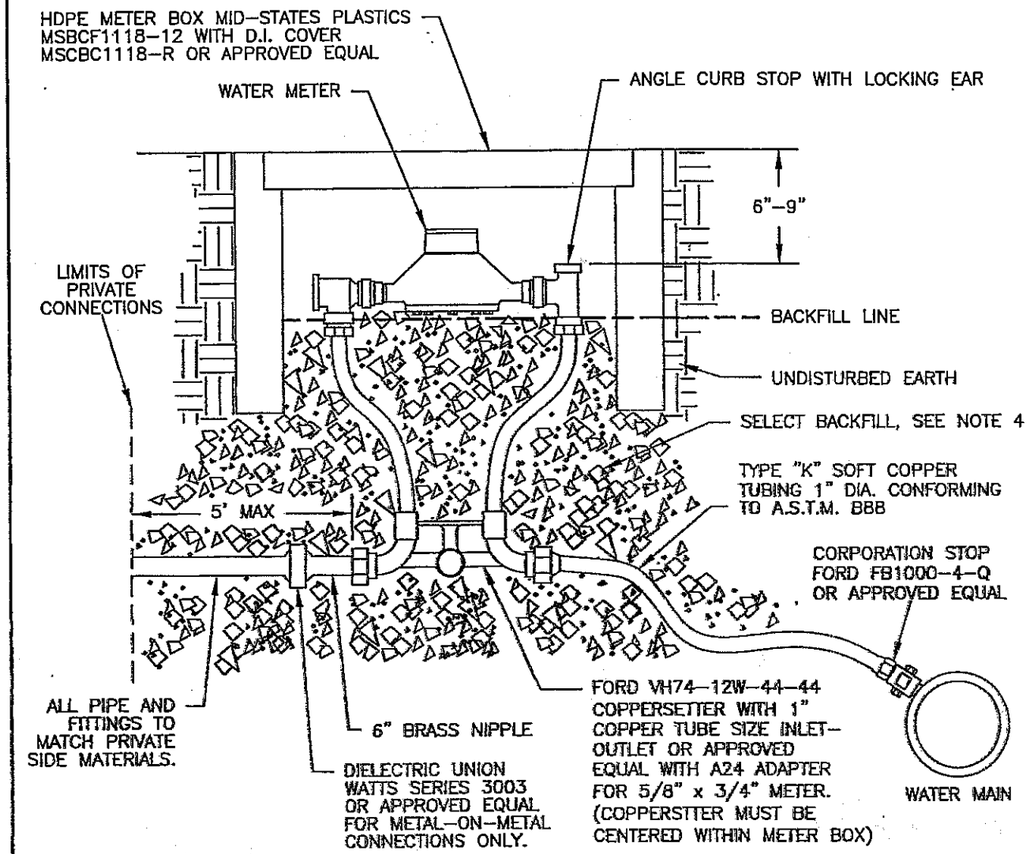
Fire Hydrant Installation

DRAWING NO. 400

APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	DRAWING REVISED	10/09	ZJW
2	EDIT HYDRANT VALVE TYPE, GEOTEXTILE	12/10	MCP

DEC 2010



NOTES:

1. FOR PVC PIPE, USE SADDLE TAP WITH COATED SADDLE AND STAINLESS STEEL BAND (FORD FC 101 OR APPROVED EQUAL).
2. IF COPPER TUBING CROSSES CATHODICALLY PROTECTED LINE, ENCASE COPPER IN POLYETHYLENE TUBING FOR 24" (CENTERED AT THE CROSSING LINE) AND FASTEN WITH 2" WIDE ADHESIVE TAPE THAT IS COMPATIBLE WITH POLYETHYLENE.
3. PLACE METER BOXES (1) LOCATED BEHIND THE SIDEWALK WHERE THERE IS SUFFICIENT RIGHT–OF–WAY, (2) WITHIN THE PLANTER STRIP, EXCLUDING WATER QUALITY FACILITIES, (3) WITHIN THE SIDEWALK WITH THE BACK OF THE METER BOX AT THE BACK EDGE OF THE SIDEWALK.
4. IF WATER SERVICE IS WITHIN SIDEWALK OR DRIVEWAY, BACKFILL WITH ¾"–0 CRUSHED AGGREGATE. OTHERWISE, BACKFILL WITH NATIVE BACKFILL.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

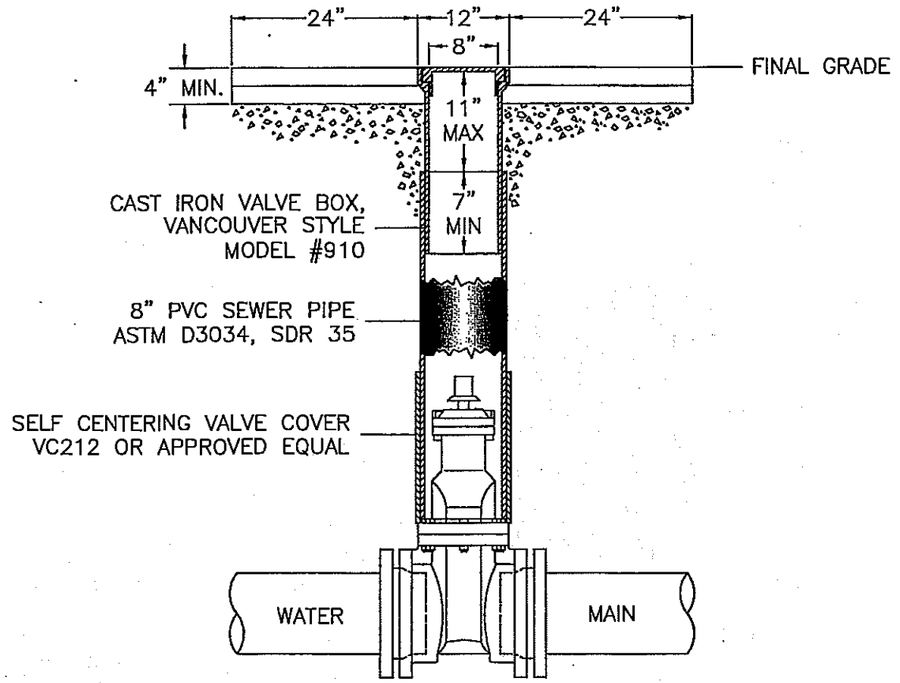
Standard 1 Inch Water Service

DRAWING NO. 401

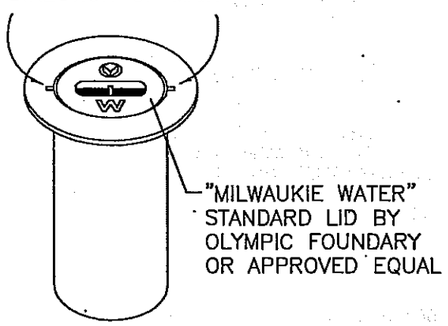
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	DRAWING REVISED	10/09	ZJW
2	CURB STOP DEPTH, ADD PRV. SIDE NOTES	12/10	MCP

DEC 2010



NOTCH 1/16" DEEP AND 3/8" LONG INDICATING DIRECTION OF MAIN



18" TALL VALVE BOX

NOTES:

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE– NO BELLS OR COUPLERS.
4. VALVE NUT EXTENSIONS SHALL BE USED TO BRING VALVE NUT WITHIN 4' OF FINAL GRADE.
5. VALVE CAN SHALL BE ENCASED IN 3" THICK 2'X2' PAD IN UNIMPROVED AREAS. REPAIRS WITHIN PAVED STREETS REQUIRE A MINIMUM 5'X5' ASPHALT PATCH.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

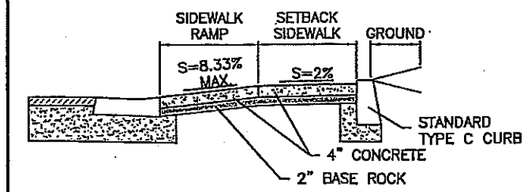
Standard Valve Box Detail

DRAWING NO. 409

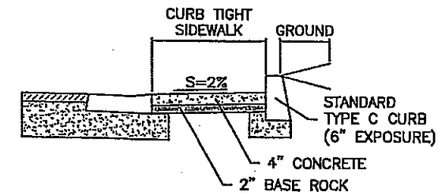
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	DRAWING REVISED	10/09	ZJW
2	GENERAL FORMATTING	12/10	MCP

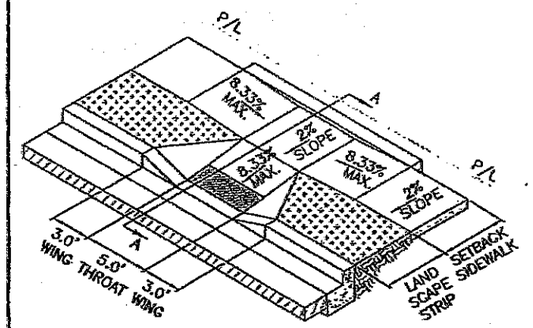
DEC 2010



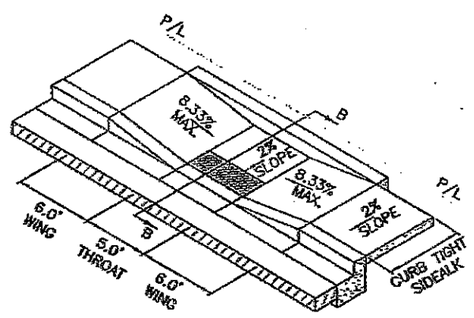
SECTION A–A



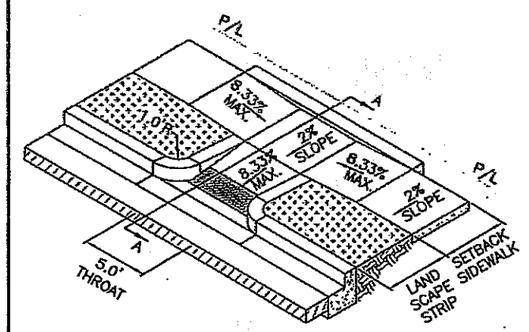
SECTION B–B



SETBACK SIDEWALK RAMP W/WINGS



CURB TIGHT SIDEWALK RAMP



SETBACK SIDEWALK RAMP W/O WINGS

1. SIDEWALK RAMPS SHALL MEET ADA STANDARDS.
2. ALL SURFACES SHALL BE LIGHTLY BROOMED. ALL EDGES SHALL BE TOOL ROUNDED AND SHINED 3" AFTER BROOMING.
3. SAW CUT EXISTING RAMP, CURB, AND SIDEWALK THAT ARE TO BE REMOVED TO THE NEAREST JOINT.
4. CONCRETE SHALL BE 3300 PSI AT 28 DAYS WITH A SLUMP RANGE OF 2" TO 4".
5. SIDEWALK PANELS SHOULD BE SQUARE (4'X4', 5'X5', ETC.). IN NO CASE SHALL THE LENGTH OF A SIDEWALK PANEL BE GREATER THAN 1.5 TIMES THE WIDTH AND VICE VERSA.
6. BASE ROCK SHALL BE 3/4"–0 OR 1"–0 CRUSHED AGGREGATE ROCK COMPACTED TO 95% MAXIMUM DENSITY OF AASHTO T–180.
7. CURB JOINT FOR CURB TIGHT SIDEWALK SHALL BE A TROWLED JOINT WITH A 1/2" RADIUS ALONG THE BACK OF CURB.
8. LANDINGS SHALL BE PLACED AT THE TOP OF EACH RAMP. LANDING SLOPES SHALL NOT EXCEED 20:1 IN ANY DIRECTION AND HAVE MINIMUM DIMENSIONS OF 5' X 5'.
9. DETECTABLE WARNING PAD SHALL BE 24" LONG IN THE DIRECTION OF TRAVEL AND INSTALLED ALONG THE FULL WIDTH OF THE BOTTOM OF THE SIDEWALK RAMP. MASCO CAST–IN–TACT (YELLOW) OR APPROVED EQUAL.
10. SETBACK SIDEWALK RAMPS: THE MAXIMUM SLOPE SHALL FIRST BE PROVIDED IN THE RAMP ADJACENT TO THE STREET. ANY ADDITIONAL ELEVATION GAIN SHALL BE PROVIDED IN THE SIDEWALK RAMP SLOPES.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

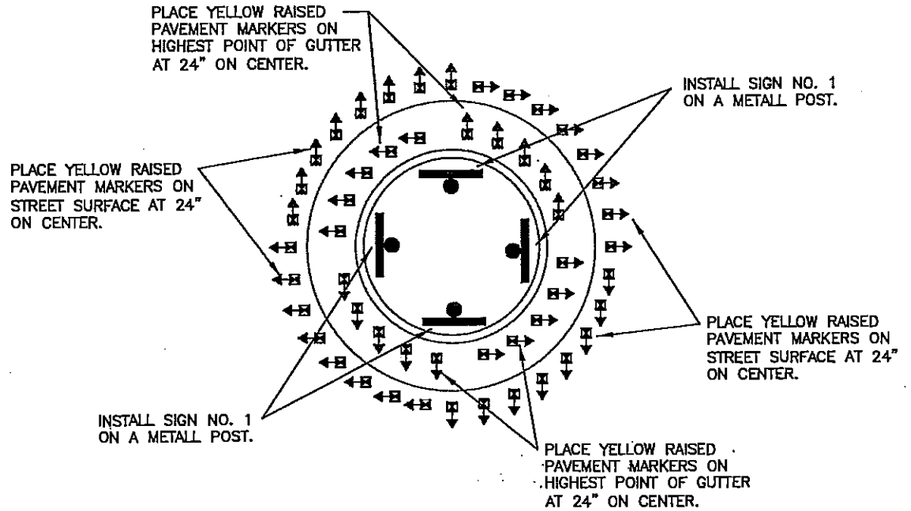
Mid–Block Sidewalk Ramps

DRAWING NO. 505

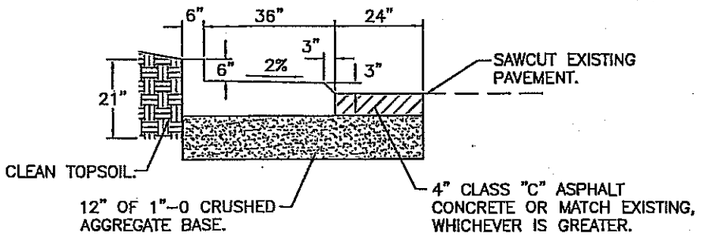
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	NEW DRAWING	10/09	ZJW
2	DRAWING NUMBER CHANGED	12/10	MCP

DEC 2010



TRAFFIC ISLAND DETAIL
NTS



REFLECTIVE SURFACE

REFLECTIVE MARKER

TRAFFIC ISLAND CURB DETAIL
NTS

SIGN #1
CITY OF PORTLAND
R5500

SIGN # 2
CITY OF PORTLAND
W1700

SIGN # 3
CITY OF PORTLAND
W4040

NOTES:

1. PLACE SIGN NO. 2 AND 3 ON A METAL POST 175 FEET FROM THE TRAFFIC ISLAND ON EACH THROUGH LEG OF THE INTERSECTION.
2. NO PARKING IS ALLOWED WITHIN 40 FEET OF A TRAFFIC ISLAND INTERSECTION CURB RETURN.
3. YELLOW 4" GORE STRIPE WITH YELLOW RAISED PAVEMENT MARKERS, 5 FEET ON CENTER, IS REQUIRED WITHIN 50 FEET OF A TRAFFIC ISLAND INTERSECTION CURB RETURN ON EACH THROUGH LEG OF THE INTERSECTION TO DIRECT TRAFFIC AROUND THE ISLAND.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

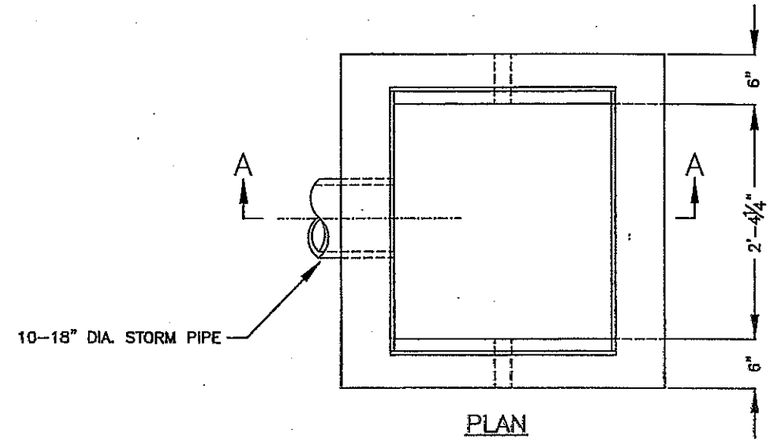
Traffic Island

DRAWING NO. 513

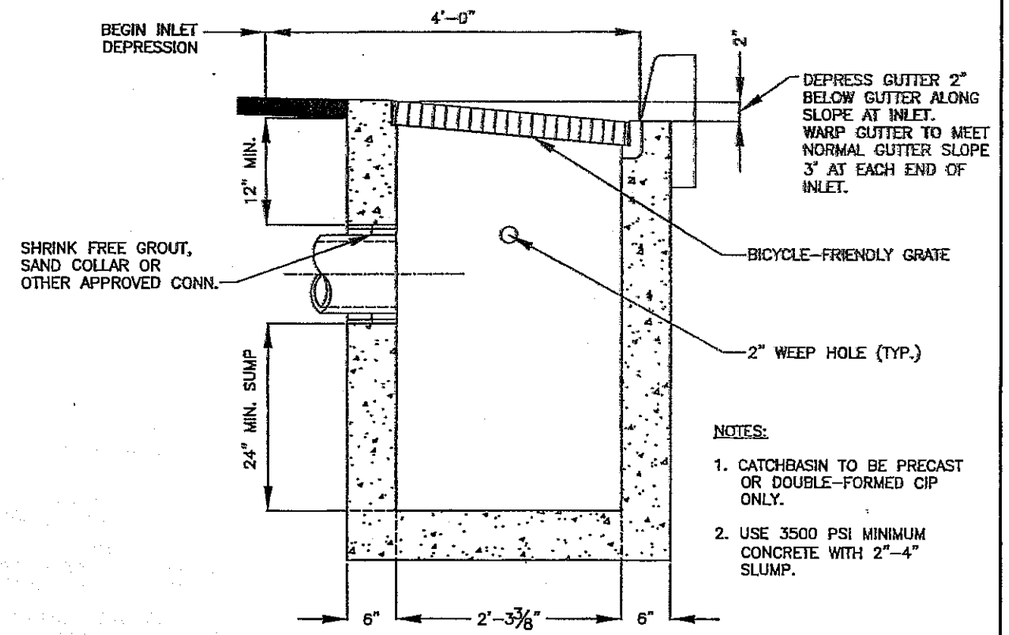
APPROVED Gary Pedersen 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	DRAWING NUMBER CHANGED	12/10	MCP

DEC 2010



PLAN



SECTION A–A

NOTES:

1. CATCHBASIN TO BE PRECAST OR DOUBLE–FORMED CIP ONLY.
2. USE 3500 PSI MINIMUM CONCRETE WITH 2"–4" SLUMP.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

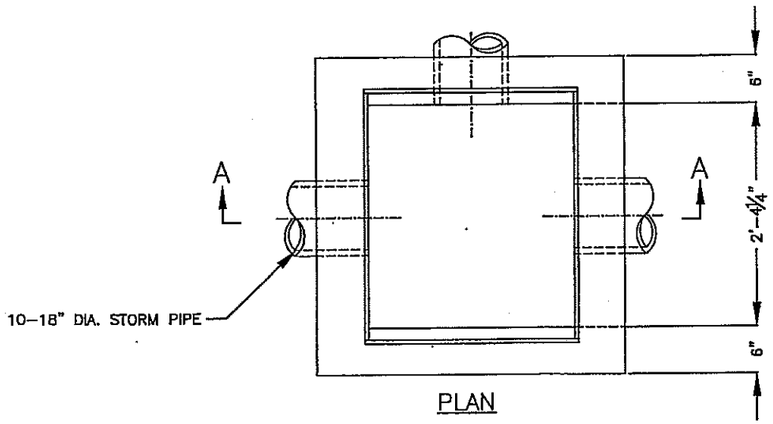
G–2 Catchbasin

DRAWING NO. 600

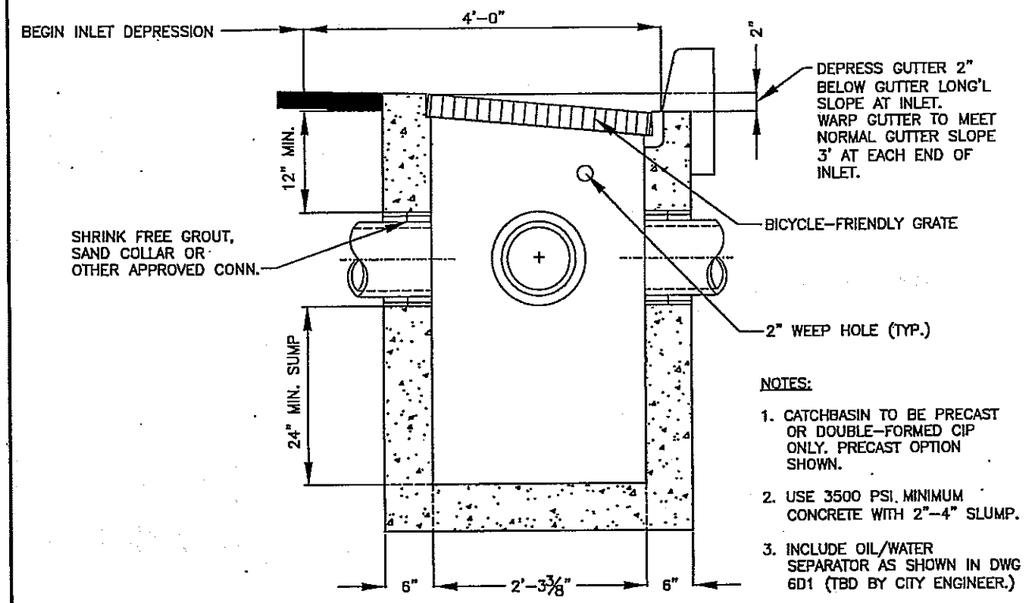
APPROVED Gary Pedersen 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	ADJUST MIN. PIPE SIZE, FORMATTING	12/10	MCP

DEC 2010



PLAN



SECTION A–A

NOTES:

1. CATCHBASIN TO BE PRECAST OR DOUBLE–FORMED CIP ONLY. PRECAST OPTION SHOWN.
2. USE 3500 PSI. MINIMUM CONCRETE WITH 2"–4" SLUMP.
3. INCLUDE OIL/WATER SEPARATOR AS SHOWN IN DWG 6D1 (TBD BY CITY ENGINEER.)
4. ACTUAL PIPE LAYOUT TBD AS REQ'D BY SITE CONDITIONS.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

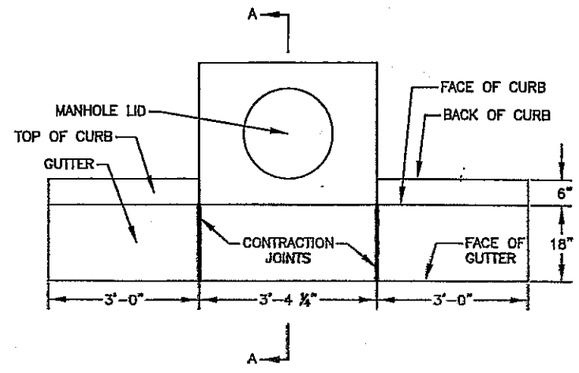
G–2 Catchbasin Flow Through

DRAWING NO. 603

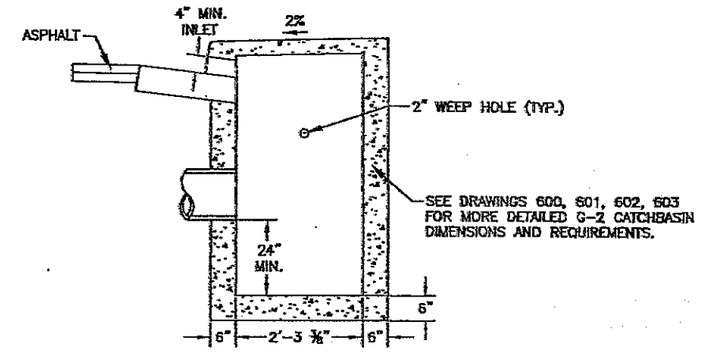
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	ADJUST MIN. PIPE SIZE, FORMATTING	12/10	MCP

DEC 2010



PLAN VIEW



SECTION A–A

NOTES:

1. ALL FABRICATED PARTS SHALL BE HOT–DIPPED GALVANIZED AFTER FABRICATION.
2. STRUCTURE MAY BE PRECAST OR DOUBLE–FORMED POURED IN PLACE ONLY.
3. USE 3500 PSI CONCRETE WITH A 2" TO 4" SLUMP.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

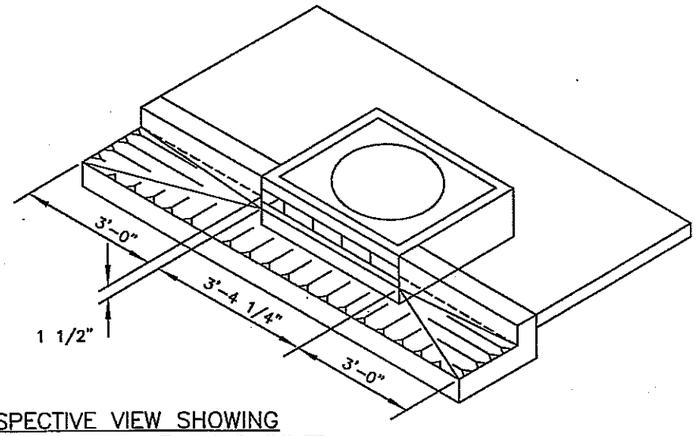
Curb Inlet Catchbasin – Sidewalk

DRAWING NO. 604A

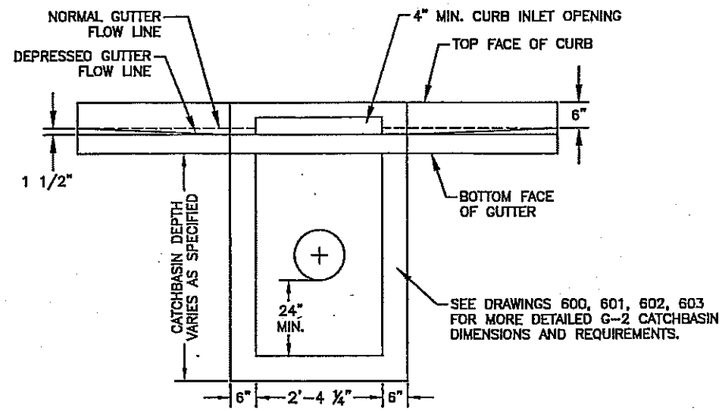
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	CHANGED SQ. LID TO MH, SUMP WAS 12"	12/09	BR
2	RECREATED DRAWING, MATCH G–2 DIMS.	12/10	MCP

DEC 2010



PERSPECTIVE VIEW SHOWING
DEPRESSED GUTTER AT CURB INLET



FRONT VIEW

NOTES:

1. ALL FABRICATED PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. STRUCTURE MAY BE PRECAST OR DOUBLE-FORMED POURED IN PLACE ONLY.
3. USE 3500 PSI CONCRETE WITH A 2" TO 4" SLUMP.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

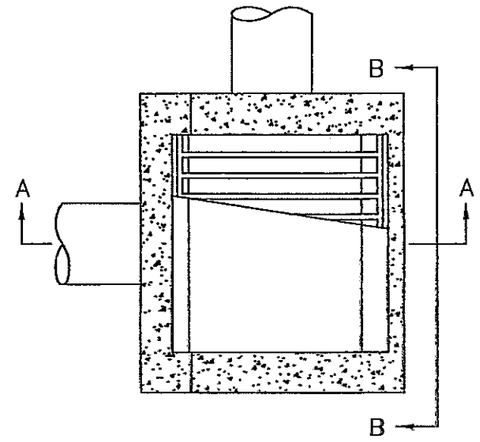
Curb Inlet Catchbasin – Sidewalk

DRAWING NO. 604B

APPROVED Gary Pedrin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	CHANGED SQ. LID TO MH, SUMP WAS 12"	12/09	BR
2	RECREATED DRAWING, MATCH G-2 DIMS.	12/10	MCP

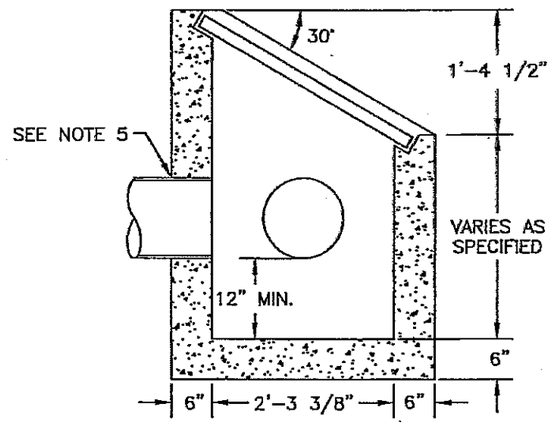
DEC 2010



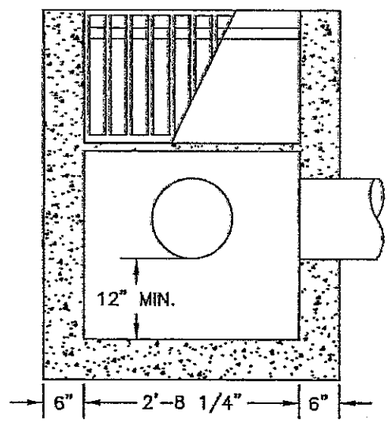
PLAN VIEW

NOTES:

1. USE PRECAST OR DOUBLE-FORMED POURED IN PLACE ONLY.
2. USE 3500 PSI CONCRETE WITH 2" TO 4" SLUMP.
3. FOR FRAME DETAIL, SEE DRAWING NUMBER 606.
4. FOR GRATE DETAIL, SEE DRAWING NUMBER 607.
5. USE SHRINK FREE GROUT, SAND COLLAR, OR OTHER APPROVED CONNECTION.



SECTION A–A



SECTION B–B

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

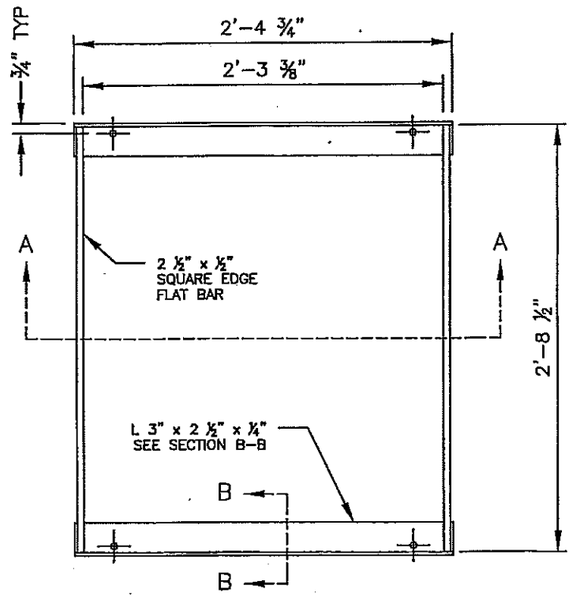
Catchbasin – Ditch Inlet

DRAWING NO. 605

APPROVED Gary Pedrin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RECREATED DRAWING, ADDED NOTE 5	12/10	MCP

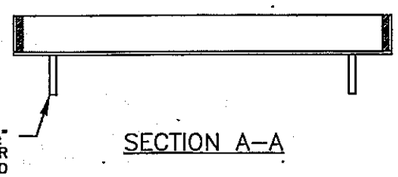
DEC 2010



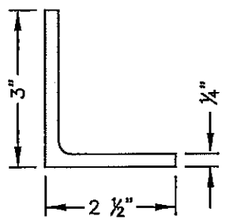
PLAN VIEW

NOTES:

1. USE GRATE SHOWN FOR G–2 CATCHBASINS AND DITCH BOTTOM INLETS.
2. FABRICATE WITH ASTM A36 STEEL.



SECTION A–A



SECTION B–B
ENLARGED SCALE

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

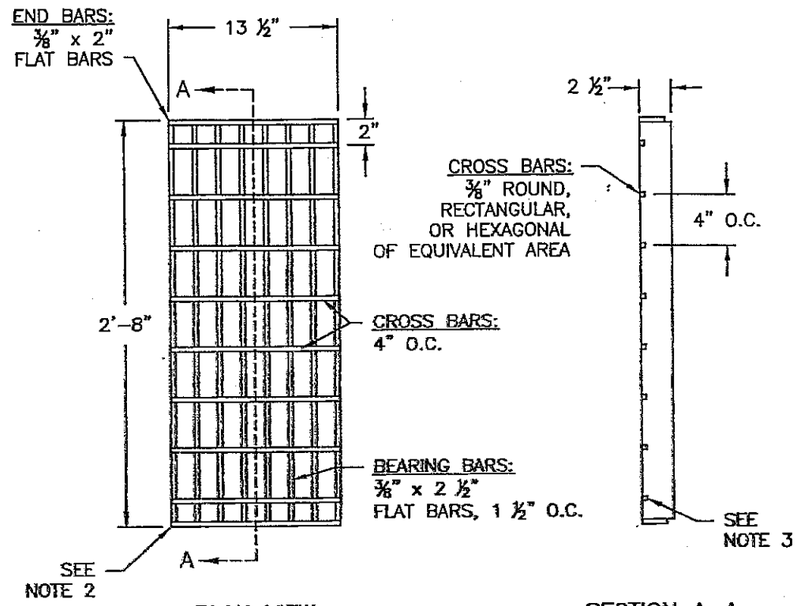
G–2 Catchbasin Frame

DRAWING NO. 606

APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RECREATED DRAWING	12/10	MCP

DEC 2010



PLAN VIEW

SECTION A–A

GRATE	SIZE	# OF BARS	TYPE	REMARKS
TYPE 2	1'–1½" x 2'–8"	8	G2	2 GRATES

NOTES:

1. CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE.
2. OUTER BEARING BARS AND EVERY THIRD INNER BEARING BAR MUST BE WELDED TO THE END BARS (3/16" TYP.)
3. ALL CROSS BARS MUST BE EITHER FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO THE BEARING BARS (3/16" TYP.)

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

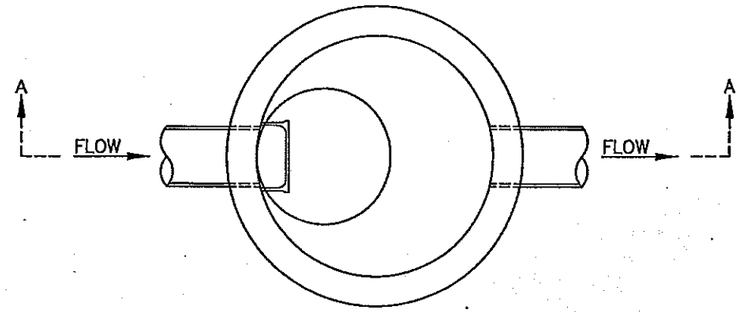
G–2 Catchbasin Grate

DRAWING NO. 607

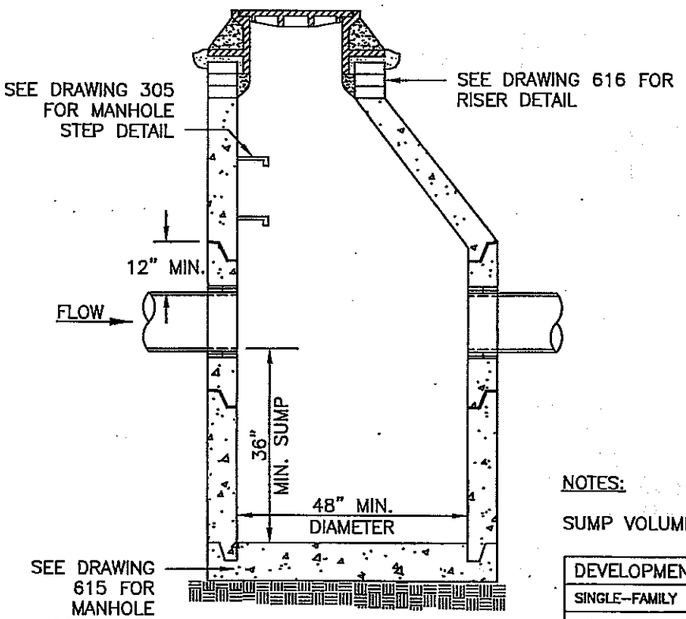
APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RECREATED DRAWING	12/10	MCP

DEC 2010



PLAN VIEW



SECTION A–A

NOTES:

SUMP VOLUME REQUIREMENTS:

DEVELOPMENT TYPE	VOLUME REQ'D
SINGLE–FAMILY RESIDENTIAL	3.5 CF/AC
MULTI–FAMILY RESIDENTIAL	22.0 CF/AC
COMMERCIAL/INDUSTRIAL	94.0 CF/AC

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

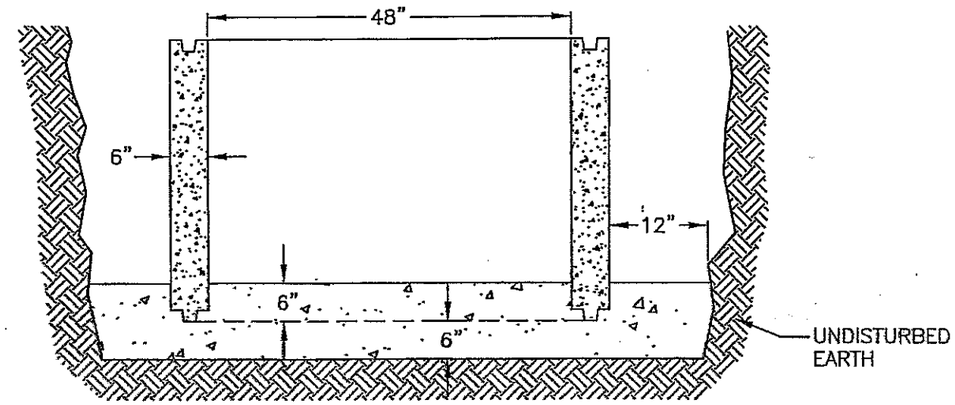
Sedimentation Manhole

DRAWING NO. 611

APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	MANHOLE ACCESS ORIENTATION	03/10	BSA
2	RECREATED DRAWING FOR CLARITY	12/10	MCP

DEC 2010



CAST–IN–PLACE MANHOLE BASE

PRECAST MANHOLE BASE

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

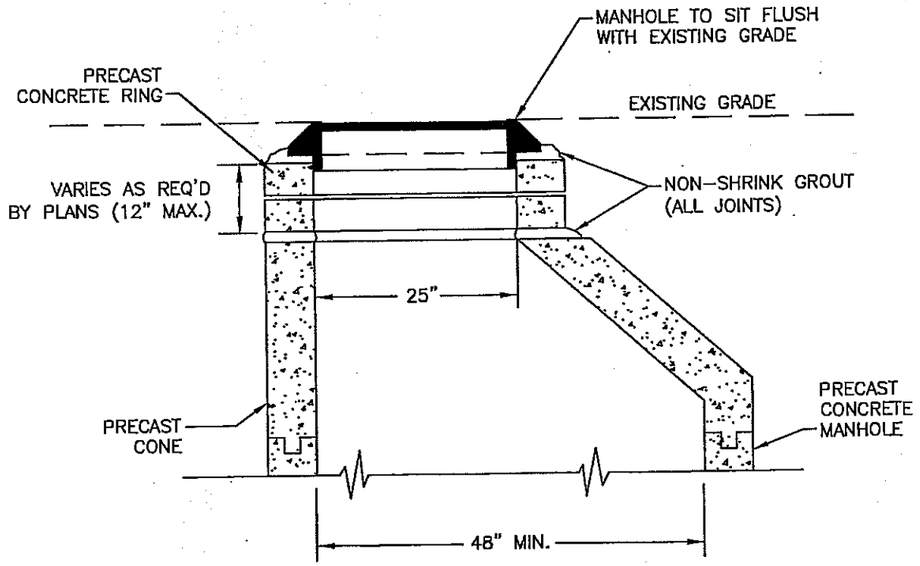
Manhole Base

DRAWING NO. 615

APPROVED Gary Parkin 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RECREATED DRAWING FOR CLARITY	12/10	MCP

DEC 2010



CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

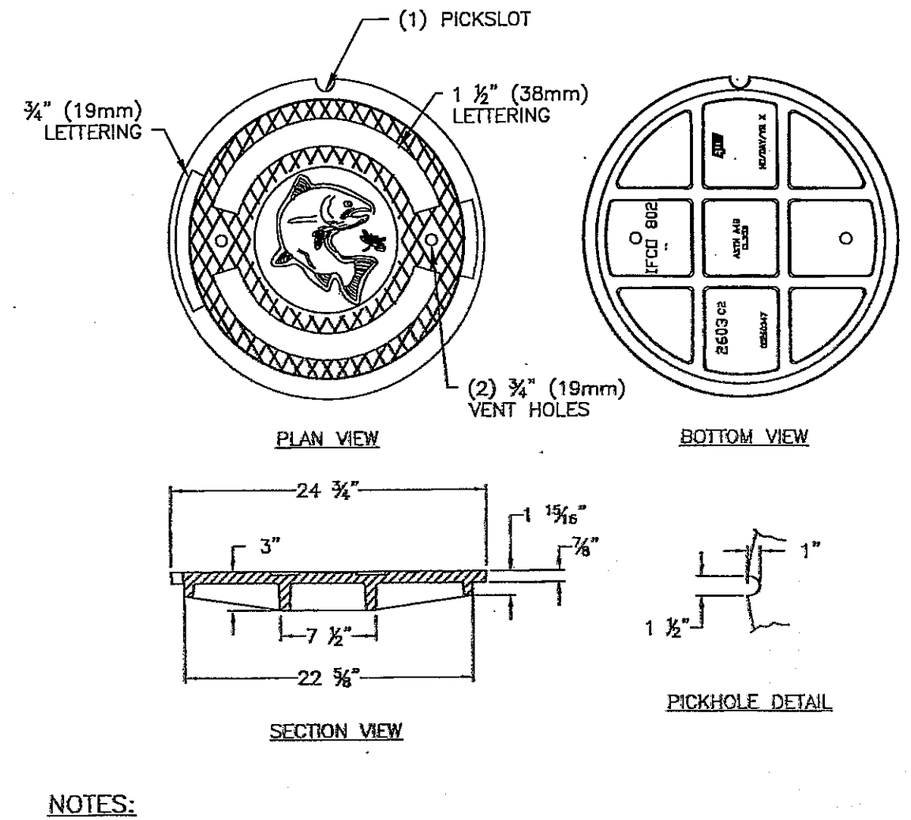
Manhole Riser Details

DRAWING NO. 616

APPROVED Gary Pedersen 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RESIZED DIMENSIONS AND TEXT	12/10	MCP

DEC 2010



NOTES:

MANUFACTURER:	EAST JORDAN IRON WORKS
PRODUCT NO.:	00260347
CATALOG NO.:	2603C2
LOAD RATING:	HEAVY DUTY
COATING:	UNDIPPED
EST. WEIGHT:	146 LBS (66 KG)
MATERIAL:	GRAY IRON ASTM A48 CL35B

LIDS WILL BE OBTAINED FROM THE CITY AND NOT THE MANUFACTURER. PLEASE CALL 503-786-7609 TO COORDINATE LID DELIVERY.

CITY OF MILWAUKIE, OREGON – PUBLIC WORKS DEPT.

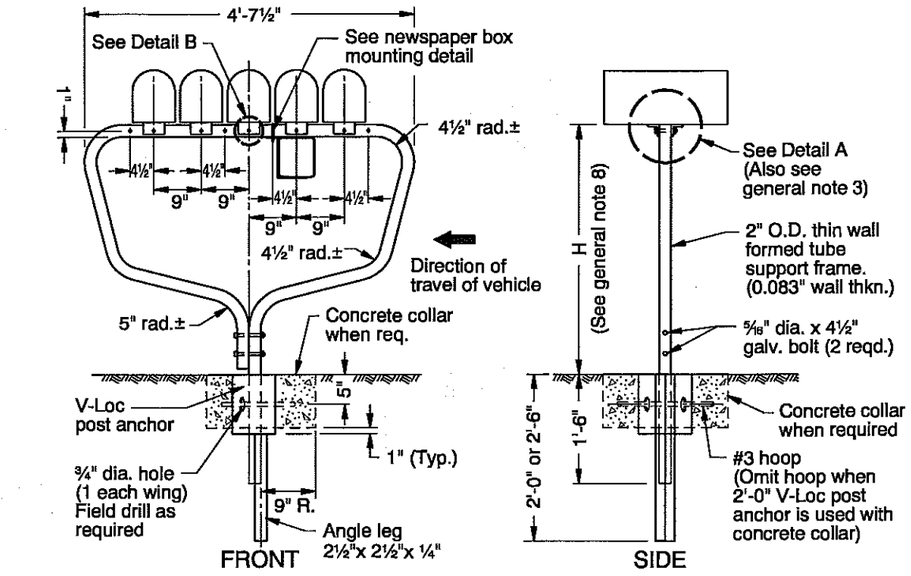
Storm Manhole Lid

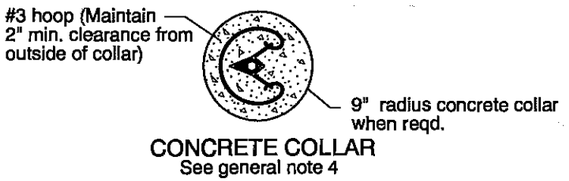
DRAWING NO. 618

APPROVED Gary Pedersen 12/10
CITY ENGINEER DATE

NO.	REVISIONS	DATE	BY
1	RECREATED MANUFACTURER DRAWING	12/10	MCP

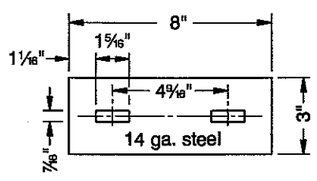
DEC 2010



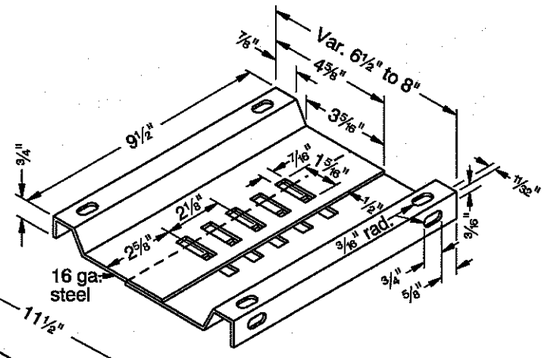


CONCRETE COLLAR
See general note 4

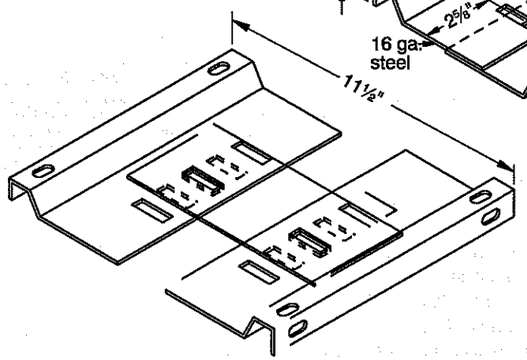
MULTIPLE SUPPORT
(Supports 5 standard (Sizes 1 & 1½) mailboxes or 4 large (Size 2) mailboxes)



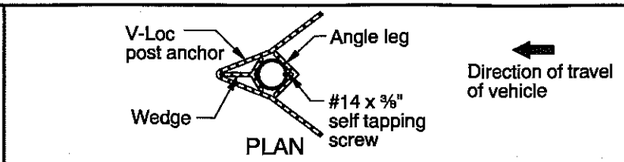
ADAPTOR PLATE



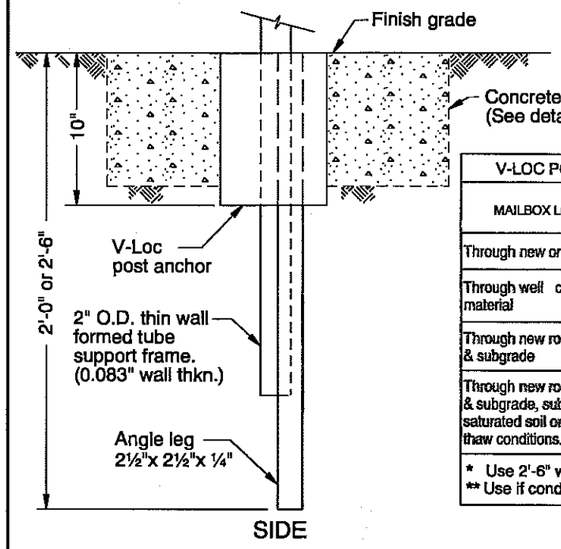
SIZE 1 & 1½
MOUNTING BRACKET



SIZE 2 ADAPTOR PLATE
MOUNTING BRACKET



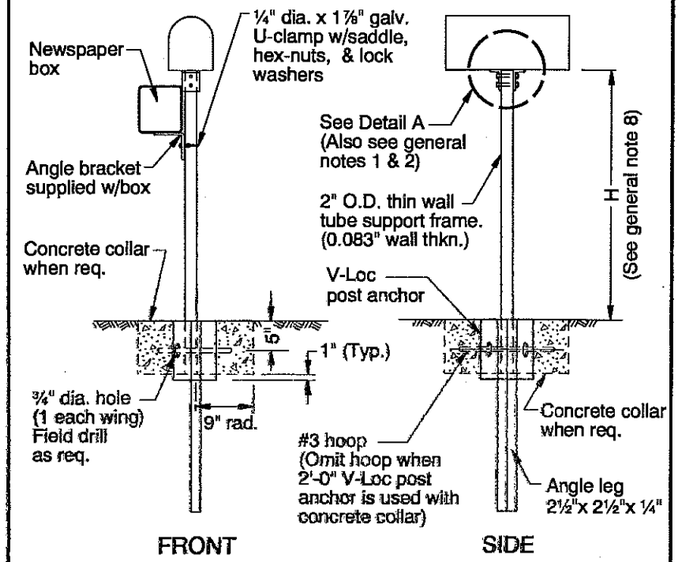
Direction of travel of vehicle



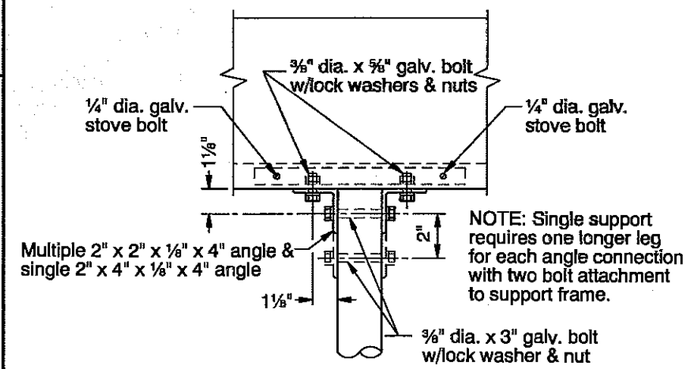
V-LOC POST ANCHOR USE CHART		
MAILBOX LOCATION	SINGLE SUPPORT (ft)	MULTIPLE SUPPORT (ft)
Through new or existing A.C.	2'-0"	2'-0"
Through well consolidated material	2'-0" *	2'-6"
Through new rock surfacing & subgrade	2'-6"	2'-0" conc. collar
Through new rock surfacing & subgrade, subject to saturated soil or freeze/thaw conditions.	2'-6" 2'-0"/ ** conc. collar	2'-6"/ conc. collar

* Use 2'-6" with size 2 mailbox.
** Use if conditions are severe.

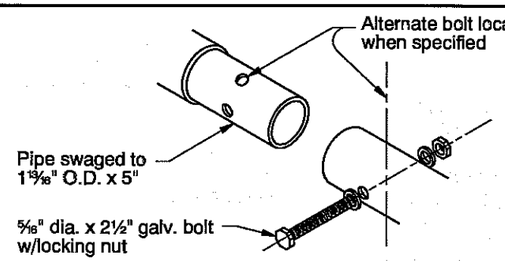
POST MOUNTING SOCKET



SINGLE SUPPORT



DETAIL A



DETAIL B

GENERAL NOTES FOR ALL DETAILS:

1. Angle connections to be parallel to traffic flow for Size 2 mailbox mounted on single post.
2. All holes in the tube support frame are to be predrilled by the manufacturer.
3. Size 2 mailbox mounted on a multiple support requires 2 each ⅜" dia. x ⅝" galv. bolts with lock washers and nuts to attach the adaptor plate to the mounting bracket. The unit will then require 4 angle connections to attach to the formed tube support frame. See Detail A.
4. Concrete collar, when required, to be poured in place after V-Loc post anchor has been installed, level and plumb. Do not excavate below bottom of V-Loc post anchor. Care shall be taken that no concrete is placed within anchor.
5. Other proprietary products available as listed in ODOT's QPL.
6. For mailbox installation locations, see Std. Drg. RD101 and project plans.
7. For Newspaper Box Mounting Detail, see Std. Drg. RD101.
8. Mounting height (H) shall be 42" nominal, measured from vehicle driving surface.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 09-JUL-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

MAILBOX SUPPORT

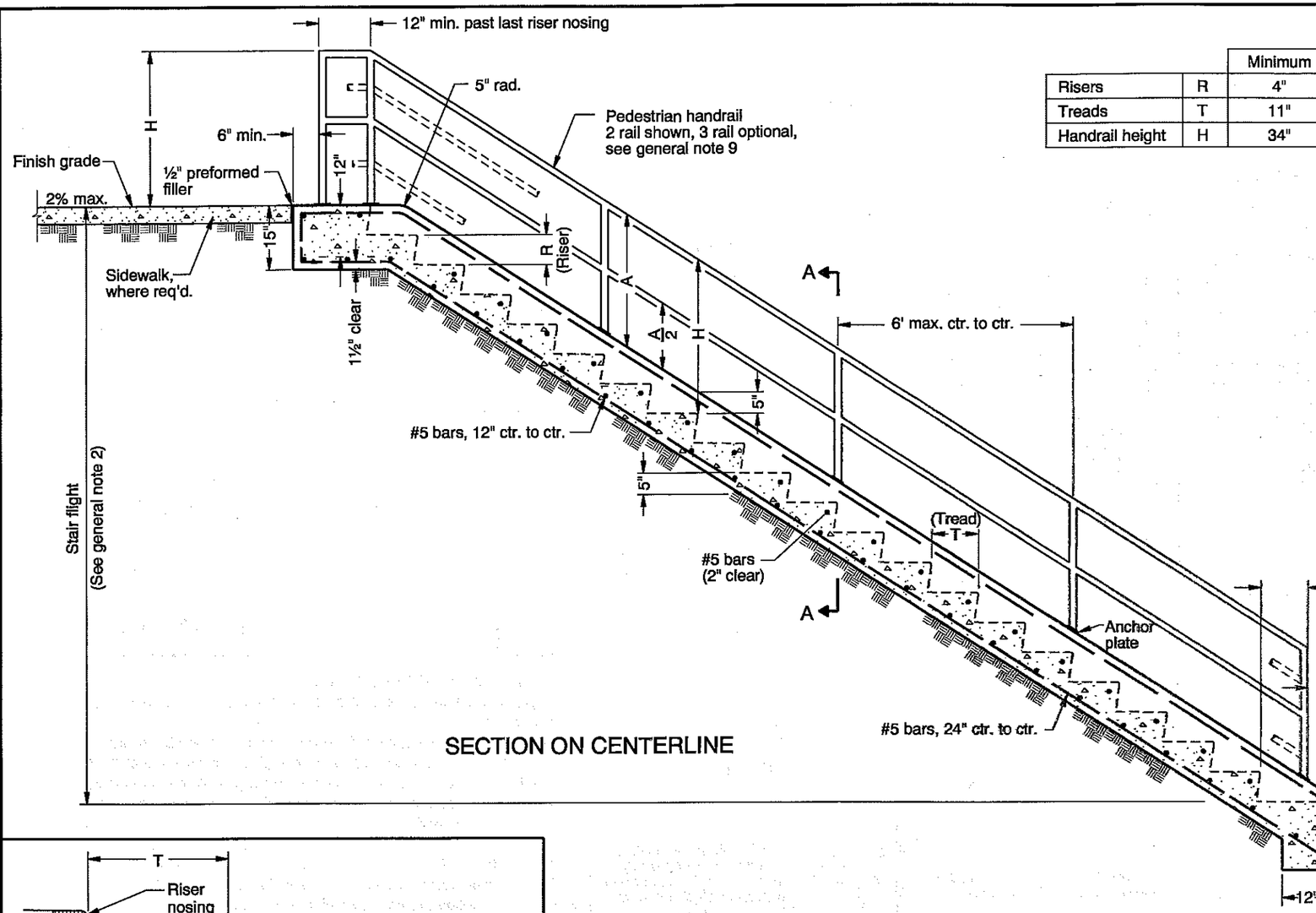
2008

DATE	REVISION DESCRIPTION
07-2010	REVISED DETAILS AND NOTES

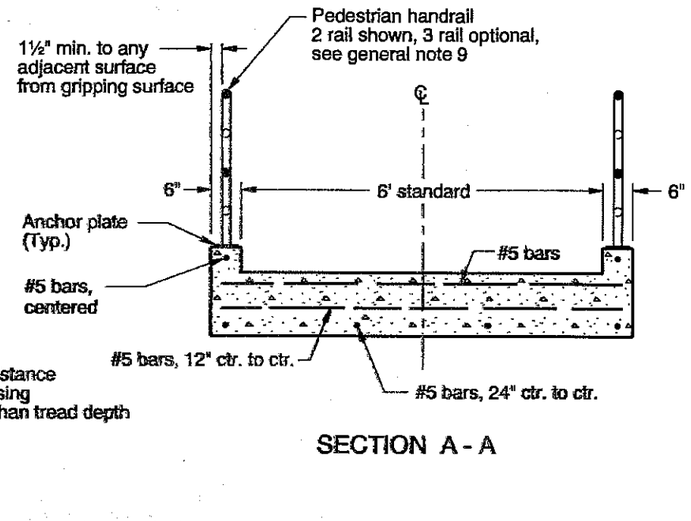
rd100.dgn 12-JUL-2010

RD100

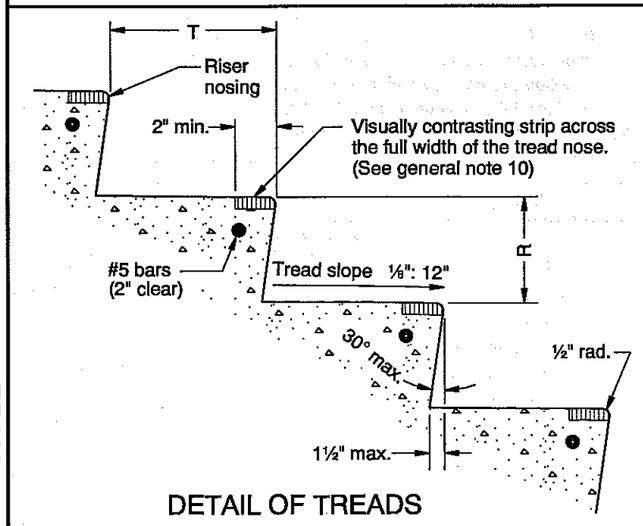
		Minimum	Maximum	Remarks
Risers	R	4"	7"	See general note 4
Treads	T	11"	N/A	See general note 4
Handrail height	H	34"	38"	Height measured from top of tread nosing to top of handrail



SECTION ON CENTERLINE



SECTION A - A



DETAIL OF TREADS

GENERAL NOTES FOR ALL DETAILS:

1. Details are based on United States Access Board Standards.
2. Maximum vertical rise between finish grade of landings shall be 12'.
3. Number of steps varies. Round edges of steps and all other exposed edges to ½" radius.
4. All risers in a stair flight shall be the same height.
   All treads in a stair flight shall be the same depth.
5. Handrail height (H) to be constant within a stair flight.
6. All concrete shall be commercial grade concrete.
7. All reinforcing steel to be placed a minimum of 2" clear of nearest face of concrete unless otherwise shown or noted.
8. See Std. Drg. RD720 for sidewalk details.
9. See Std. Drgs. RD770 & RD771 for pedestrian handrail details.
10. Provide painted contrasting strip (color shall be safety yellow), or approved equal.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 29-JUN-2009

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

CONCRETE STAIRWAY

2008

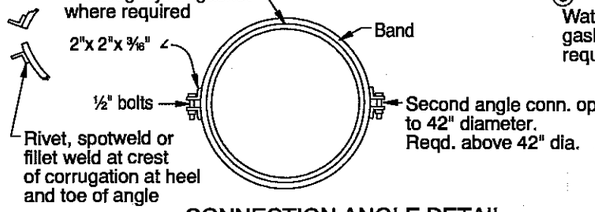
DATE	REVISION DESCRIPTION
06-2009	REVISED DETAIL & NOTES

rd120.dgn 30-JUN-2009

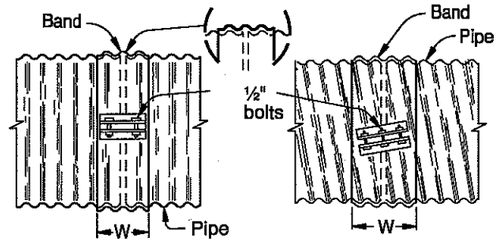
RD120

rd326.dgn 31-DEC-2008

TYPE A



CONNECTION ANGLE DETAIL

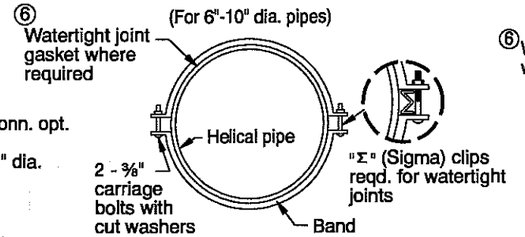


ANNULAR COUPLING HELICAL COUPLING

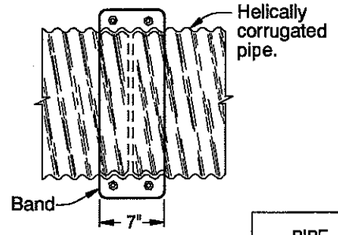
2⅔" x ½" CORRUGATIONS				3"x 1" CORRUGATIONS			
PIPE DIAMETER (in)	W(in) ANN.	W(in) HEL.	#of ½" Bolts	PIPE DIAMETER (in)	W(in) ANN.	W(in) HEL.	#of ½" Bolts
6-10	7	7	2	36-84	14	14	3
12-15	7	12	2-3	36-120 ⑤	26	26	5
18-84 ⑤	12	12	3				
24-84	24	24	5				

TYPE B

(For 6"-10" dia. pipes)

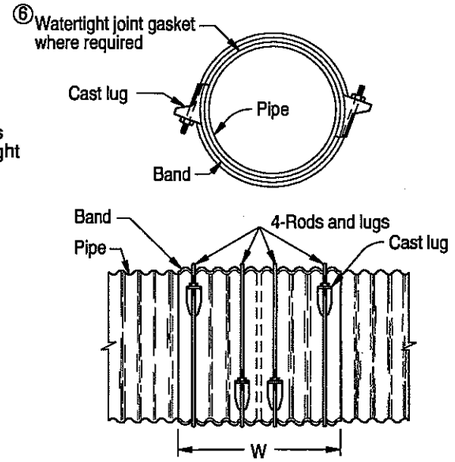


END VIEW



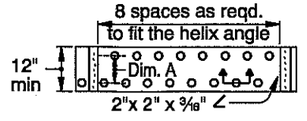
TOP VIEW

TYPE D



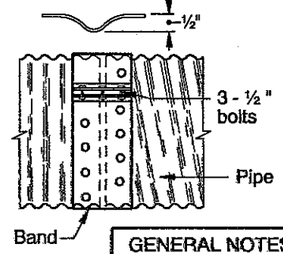
TYPE E

(For 12"-30" dia. pipes)

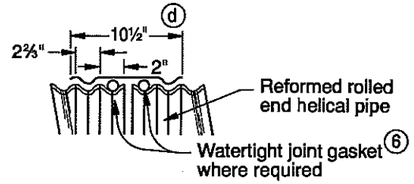


Dimension A: 7" min. between dimples as reqd. to fit the helix angle.

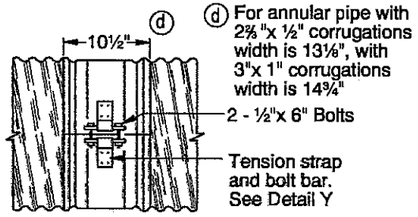
SECTION THRU DIMPLE



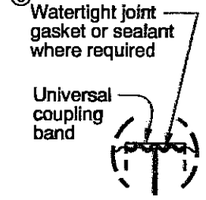
TYPE F



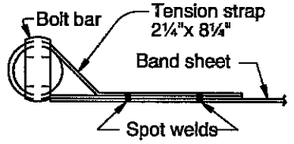
JOINT CROSS SECTION



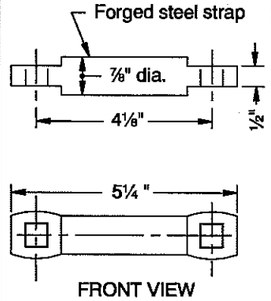
CORRUGATIONS		PIPE DIA. (in)	Rod Dia. (in)	NARROW BAND W (in)	NARROW BAND # OF RODS	WIDE BAND W (in)	WIDE BAND # OF RODS
2⅔"x ½"		12-21	⅜	12	2		
		24-54 ⑤	½	12	2	24	4
		60-84 ⑤	⅝	12	2	24	4
3"x 1"		36-54 ⑤	½	14	2	26	4
		60-84 ⑤	⅝	14	2	26	4
		84-120	⅝			26	4



DETAIL Y
TENSION STRAP & BOLT BAR DETAIL

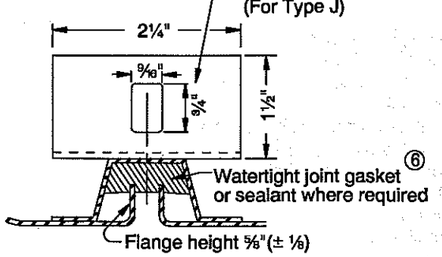


TENSION STRAP



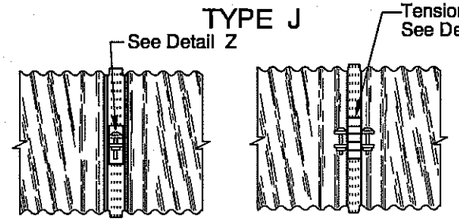
BOLT BAR

TYPE J (Cont.)

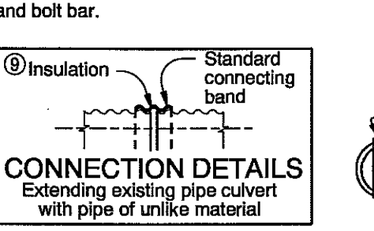


SECTION A-A

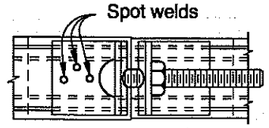
TYPE J

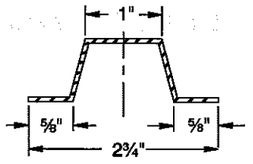


NOTE:
Design variations in fasteners (Straps, bars, & welds) which provide a tensile strength of 7500 lbs are permissible.

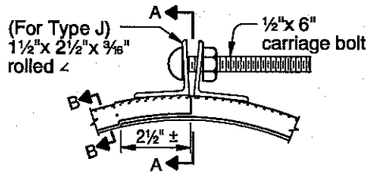


CONNECTION DETAILS
Extending existing pipe culvert with pipe of unlike material

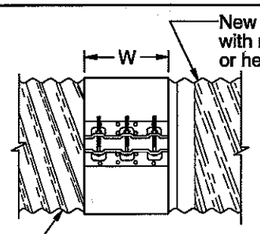




SECTION B-B



DETAIL Z



TYPE K
FLAT BAND OR DIMPLE BAND

* PIPE ARCH ONLY

BAND TYPE	CORRUGATIONS	PIPE DIA. (in)	Min. W (in)	GASKET TYPE
STEEL	2⅔"x ½"	12-48	12	SLEEVE
		54-84	24	
	*3" x 1"	54-144	24	
ALUMINUM	2⅔"x ½"	12-48	12	SLEEVE
		54-84	24	
	*3" x 1"	54-96	24	

GENERAL NOTES FOR ALL DETAILS:

1. All steel coupling bands and conn. hardware shall be galv.or aluminum coated.
2. Coupling bands for corr. iron and steel pipes may be two numerical thkn. lighter than that used for the pipe but not more that 0.109" nom. thkn. nor less than 0.052" nom. thkn. Coupling bands for corr. aluminum pipe shall be of the same thickness as that used for the pipe.
3. Types A, D and F coupling bands shown for pipes 15" to 72" in dia. are typ. to pipe-arches of equal peripheral measurement. Type J coupling bands shown for pipes 12" to 66" with pipe thkn. of 0.064"nom. thkn. to 0.109" nom. thkn. Type J limited to 36" max. dia. for pipe down slope installations.
4. Type G coupling bands are smooth sleeves of either plastic (Appr. by the engr.), aluminum or galv. steel which may be used to couple perf. drain pipe in installations where rigid type drain pipe is an approved alternate. For 6"-10" pipe width is 6" and for 12"-15" pipe width is 8".
5. Under conditions where conc. pipe may be used as an acceptable alt., the min. width coupling band indicated for the band type, corr. and pipe dia. shown may be used.
6. Watertight joints with gaskets are reqd. for irrigation pipes, storm sewers, and other installations when shown on the plans. Gaskets for Types A, B, D and E coupling bands shall be (butt-cemented or vulcanized) synthetic, closed-cell sponge rubber ⅜" thick of a width equal to the band width and centering on the joint. For pipe 12" or less in dia., the gasket thkn. may be ⅜". Gaskets for the Type F coupling band shall be "O" rings conforming to ASTM C443 and a mastic sealant strip ⅛"x 1½" wide by 5" (10½" band) or 8" (13⅛" band) or 9" (14¾" band) shall be placed in lap between bands. "O" ring gaskets shall be 13/16" min. dia. (10½" and 13⅛" bands) and 1⅜" min. dia. (14¾" bands). Gaskets for Types H and J coupling bands shall be butyl rubber base joint sealant or other appr. resilient matl. placed in the channel section and shall be ⅜" thick, min.
7. Joints for sanitary sewers and siphons are to be tested for water tightness in accordance with the Standard Specifications.
8. One or two piece coupling bands are optional for pipe dia. up to and including 42". Coupling bands of two or more pieces are required for pipe diameters over 42".
9. To prevent galvanic action when unlike metals are connected, the connecting band shall be coated with asphalt or other insulating material as approved by the engineer.

CALC. BOOK NO. _____ BASELINE REPORT DATE _____

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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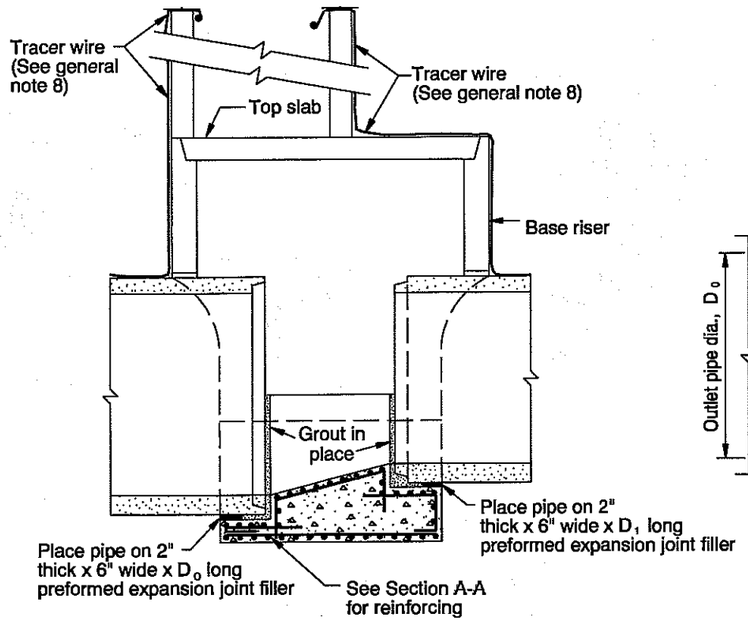
OREGON STANDARD DRAWINGS

COUPLING BANDS FOR CORRUGATED METAL PIPE

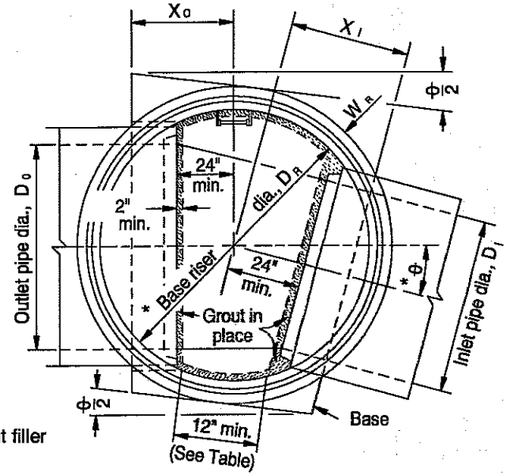
2008

DATE	REVISION DESCRIPTION

RD326



DEVELOPED SECTION
ALONG PIPE CENTERLINE

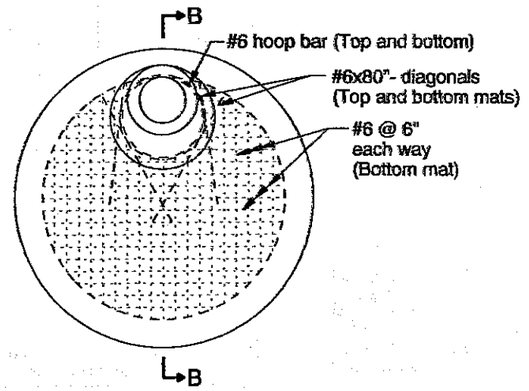


MANHOLE BASE PLAN

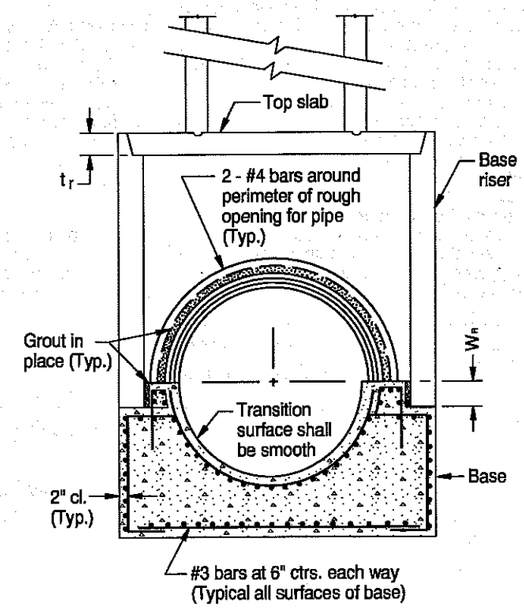
Inlet pipe dia. D_I when $D_I > D_O$

* Base Riser			Outlet pipe dia	*Theta. max when $D_I = D_O$	Base X_O $X_I = X_O$ when $D_I = D_O$	Base X_I when $D_I < D_O$		
D_R	W_R	tr	D_O D_I			$D_I = (D_O - 6)$	$D_I = (D_O - 12)$	$D_I = (D_O - 18)$
60"	6"	10"	30"	75°	29"	32"	33"	34⅝"
72"	7"	10"	36"	67°	33"	36"	37¾"	39½"
72"	7"	10"	42"	60°	33"	36"	37¾"	39½"
84"	8"	10"	48"	54°	36"	39"	41"	43⅞"
84"	8"	10"	54"	49°	36"	39"	41"	43⅞"
96"	9"	12"	60"	45°	39"	42"	45⅜"	47⅞"
96"	9"	12"	66"	42°	39"	42"	45⅜"	47⅞"
108"	10"	12"	72"	39°	42"	45"	48¾"	51½"
108"	10"	12"	78"	36°	42"	45"	48¾"	51½"
120"	11"	12"	84"	34°	44"	48"	51¾"	54⅞"
120"	11"	12"	90"	32°	44"	48"	51¾"	54⅞"
126"	11½"	12"	96"	30°	45"	51"	54⅜"	56½"

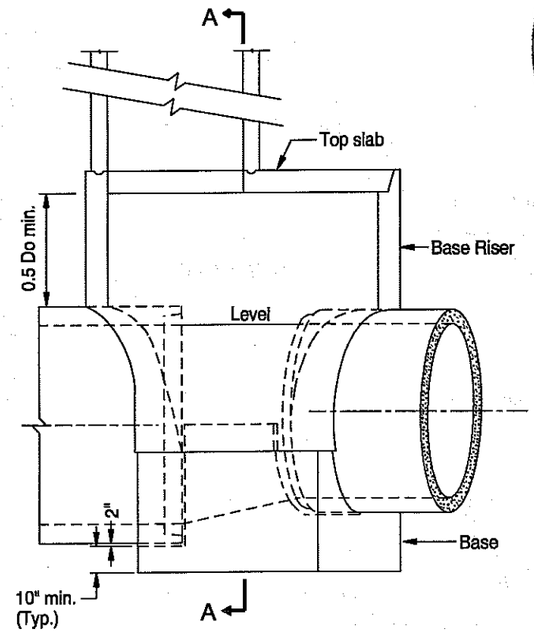
* A special design using a larger Base Riser diameter D may be required to obtain specified 12" min. dimension when ϕ angle exceeds ϕR max.



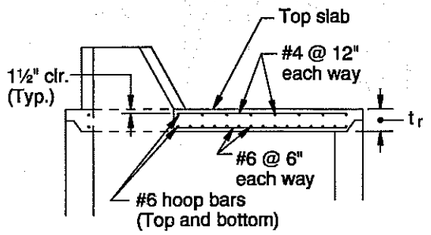
MANHOLE TOP SLAB PLAN
(Bottom reinf. mat shown)
(Manhole I.D. >4', Δ10' 6")



SECTION A-A



MANHOLE BASE ELEVATION



SECTION B-B

GENERAL NOTES FOR ALL DETAILS:

1. All concrete shall be Class 4000. All precast sections shall conform to requirements of ASTM C478.
2. All reinforing steel shall conform to ASTM Specification A706 or AASHTO M31 (ASTM A615), Grade 60. The following splice lengths shall be used (unless shown otherwise):

Bar Size	4	5	6
Uncoated	16"	20"	24"

3. All reinforcement shall be placed 2" clear of the nearest face of the concrete unless shown otherwise.
4. Eccentric reducing cones or eccentric reducing flat slabs designed in accordance with AASHTO M199 shall be placed on top of the base riser as required by the contract plans. Eccentric reducing flat slabs shall be designed to support a load of 120 lb/ft in addition to the dead load of the slab, the risers above the slab, and the earth overburden above the slab.
5. Base riser to be pre-cast unless otherwise shown on the plans.
6. Cast-in-Place concrete, shown thus:
7. See Std. Drg. RD336 for manhole steps details.
8. See Std. Drg. RD336 for tracer wire details.
9. Ladder with notched safety rail and removable extention is reqd. for manholes with depths between 24'-0" and 50'-0".

CALC. BOOK NO. _____ BASELINE REPORT DATE _____

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

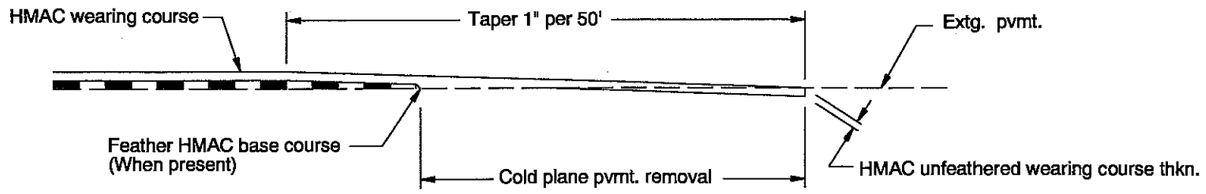
LARGE PRECAST MANHOLE

2008

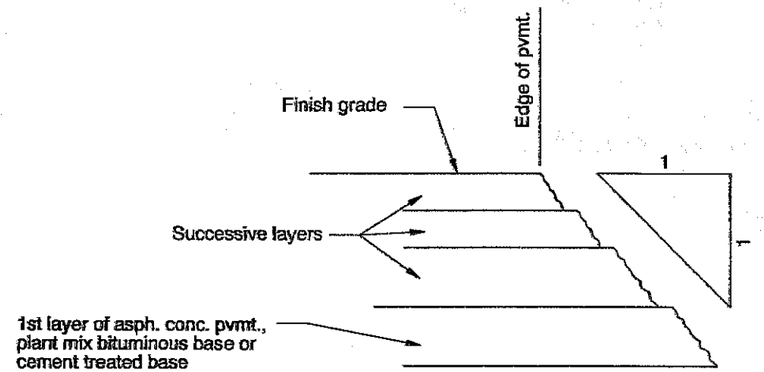
DATE	REVISION DESCRIPTION

rd346.dgn 31-DEC-2008

RD346

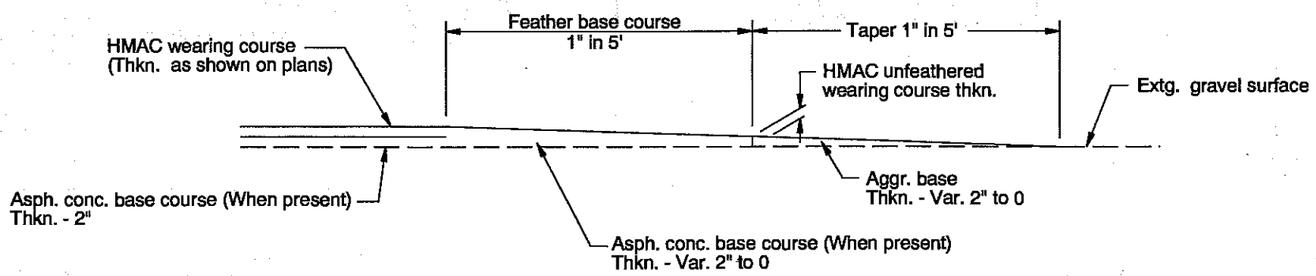


AC PAVEMENT MATCH AT PROJECT ENDS
OR BRIDGE ENDS WHEN NOT OVERLAYING THE BRIDGE



Overall slope of successive layers to be 1:1
Slope of individual layer may be placed steeper

MULTI-LAYER PAVEMENT CONSTRUCTION



METHOD OF FEATHERING AC PAVEMENT
AT GRAVEL APPROACHES

CALC. BOOK NO. _____ BASELINE REPORT DATE _____

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

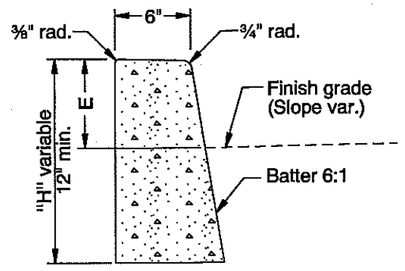
ASPHALT PAVEMENT DETAILS

2008

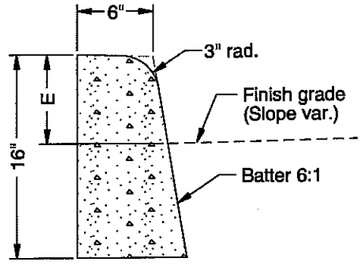
DATE	REVISION DESCRIPTION

rd610.dgn 31-DEC-2008

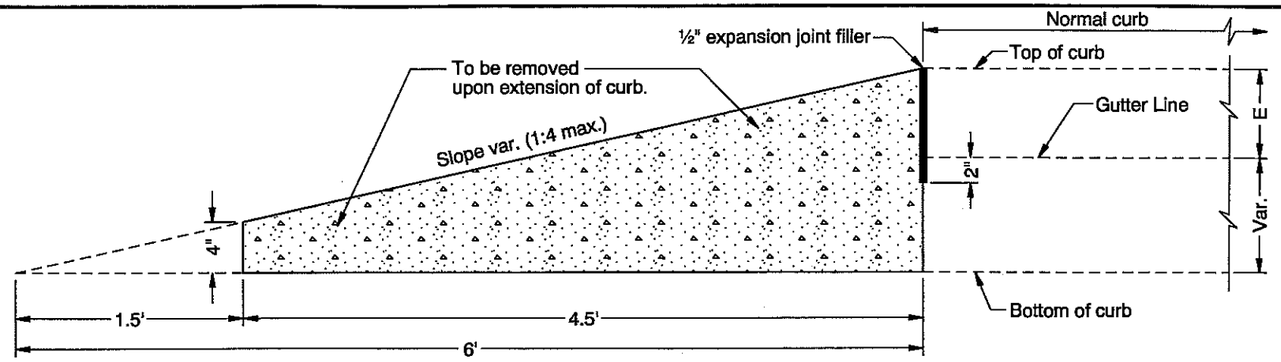
RD610



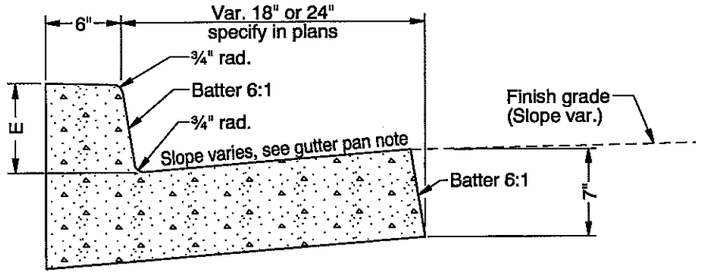
O.D.O.T. & City of Portland Standard "H"=16"
STANDARD CURB



MOUNTABLE CURB

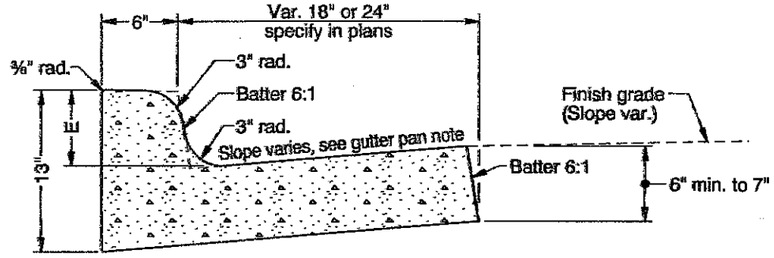


CURB ENDING DETAIL

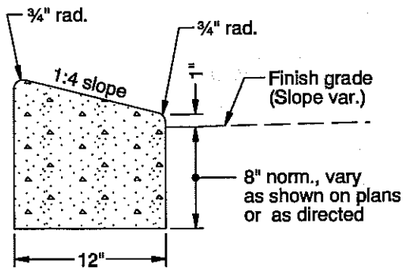


CURB AND GUTTER

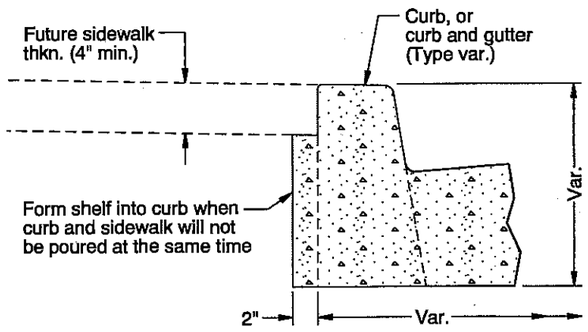
GUTTER PAN NOTES:
Slope 8% normal.
Use 5% slope for gutter width greater than 24".
Slope 4% at ramps. Vary slope as reqd. for drainage.
Vary where shown on plans, and allowed by jurisdiction.



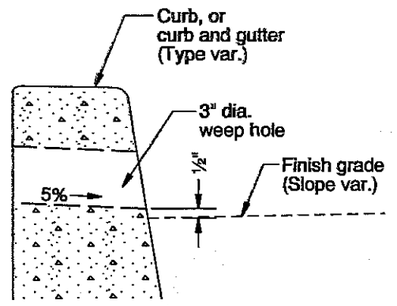
MOUNTABLE CURB AND GUTTER



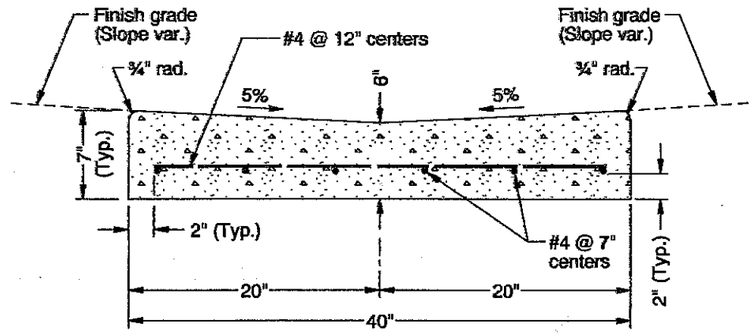
LOW PROFILE
MOUNTABLE CURB



MODIFICATION FOR KEYWAY
(Where shown on plans)



WEEP HOLE DETAIL
(Where shown on plans, and allowed by jurisdiction)



VALLEY GUTTER

GENERAL NOTES FOR ALL DETAILS:

1. Curb exposure "E" = 6" to 9", as measured vertically from flowline to highest point on curb. Vary as shown on plans or as directed. O.D.O.T standard "E"=7".
2. Const. expansion joints at 200' maximum spacing, and at points of tangency, and at ends of each driveways.
3. Const. contraction joints at 15' maximum spacing, and at ends of each inlet and ramp.
4. Transitions shall be used to connect curbs of different exposures "E". ("E" Is the total vertical dimension of those curb surfaces having a slope of 1:1 or steeper). Minimum desirable transition length shall be 20' for each 1" difference in "E".
5. Tops of all curbs shall slope toward the roadway at 2% normal, unless otherwise shown, or as directed.
6. Dimensions are nominal, vary to conform with curb machine approved by the engineer.
7. Dimensions adjacent to radii are measured to the point of intersection of curb surfaces.
8. For sidewalk details, and monolithic curb & sidewalk, see Std. Drg. RD720.
9. For drainage curbs, see Std. Drg. RD701.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 30-JUN-2009

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

CURBS

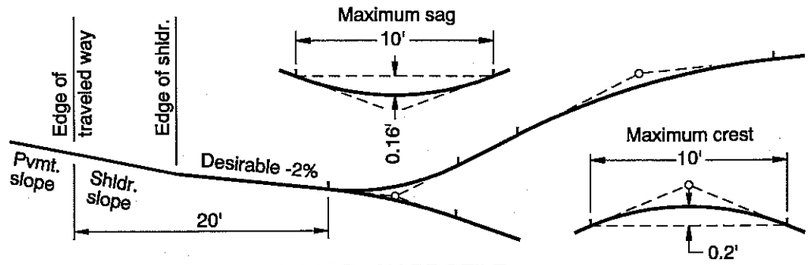
2008

DATE	REVISION DESCRIPTION
07-2009	REVISED DETAILS & NOTES

30-JUN-2009 rd700.dgn

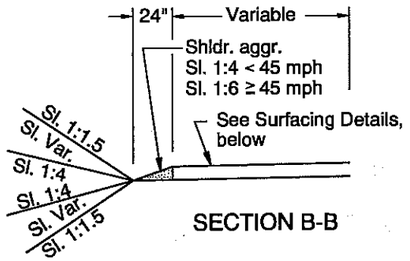
RD700

Effective Date: December 1, 2010 - May 31, 2011



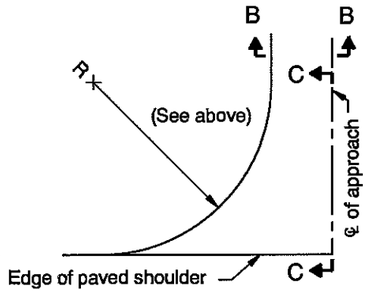
APPROACH PROFILE

NOTE:
When grades on approaches meet without vertical curves the maximum algebraic difference on crests should be 8% and on sags 12%. Grades steeper than 15% should not be used without prior approval of the engineer of record. Any driveways with slopes exceeding 12% shall be paved.

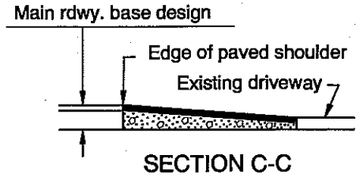


SECTION B-B

R= { 30' normal (Major constr.) / 20' normal (Minor constr.)



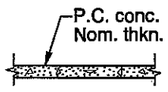
HALF PLAN



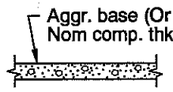
SECTION C-C

NOTE:
Normal paving limits to extend 20' (30' for public road connections) from the edge of pavement or to the right of way line, whichever is less. Approach surfacing and width to then match existing approach.

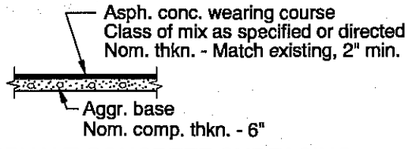
APPROACH



P.C. CONCRETE SURFACING



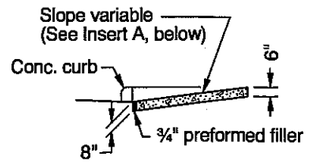
GRAVEL SURFACING



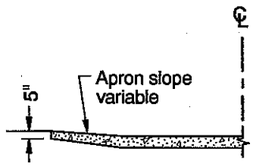
ASPHALT CONCRETE SURFACING

APPROACH AND DRIVEWAY CONNECTION SURFACING DETAILS

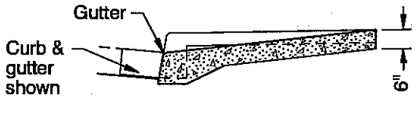
TYPE A
PORTLAND CEMENT CONCRETE



SECTION D-D

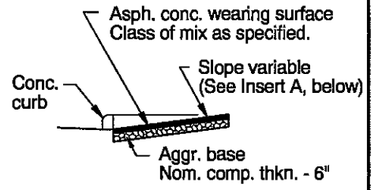


SECTION E-E

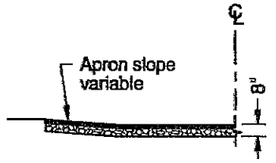


SECTION A-A
FOR MONOLITHIC DRIVEWAYS

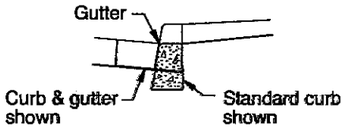
TYPE A-1
ASPHALT CONCRETE



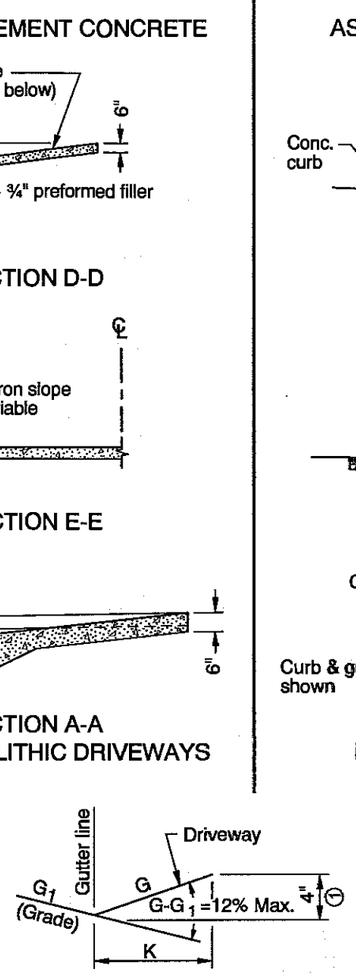
SECTION D-D



SECTION E-E

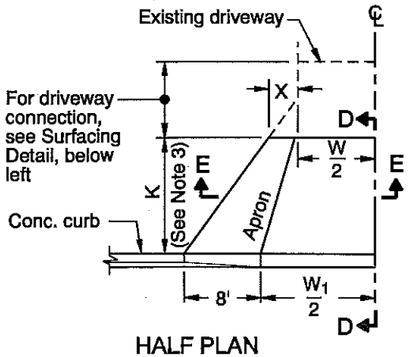


SECTION A-A
FOR DRIVEWAYS

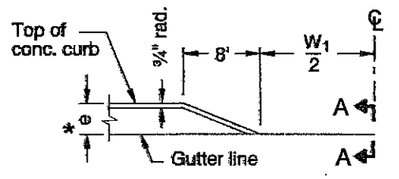


INSERT A

① Minimum allowable for drainage control on negatively sloped driveways.



HALF PLAN

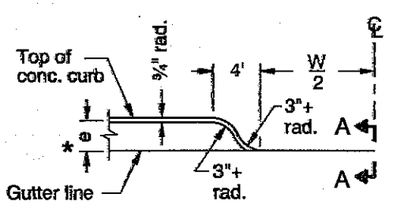


HALF ELEVATION

TABLE A

W (ft)	X (ft)	K (ft) 5	6	8	10
		W1 (ft)			
12	3	15	15	15	15
14		17	17	17	17
16		19	19	19	19
18		21	21	21	21
20		23	23	23	23
22	4	27	28	29	30
24		29	30	31	32
26		31	32	33	34
28		33	34	35	36
30		35	36	37	38
32	5	41	42	44	46
34		43	44	46	48
36		45	46	48	50

Where a travel lane is constructed adjacent to the curb line, use 16' W min. for residence and 30' W min. for light commercial, add 5' to W1 for both. Do not add the 5' to W1 when 4' min. shldr. or bikeway is included in the typical.



HALF ELEVATION
(ALTERNATE APRON SLOPE)
(See General Note 5)

* Curb exposure "e" = 7" normal. Vary as shown on plans or as directed.

NON-SIDEWALK DRIVEWAYS
NOTE: See "Table A" for dimensions not shown.

GENERAL NOTES FOR ALL DETAILS:
1. Driveway details shown on this drawing are to be used on roadways where there are no existing or planned sidewalks in driveway vicinity. For driveways located in a sidewalk see Std. Drgs. RD720, RD725 and/or RD730, RD735, RD740, RD745, RD750.
2. Width of driveway (W) as shown on plans or as directed.
3. K is the distance from back of curb to back of driveway (10' max.).
4. Where existing driveway is in good condition, construct only as much as required for satisfactory connection with new work.
5. "Alternate Apron Slope" used only where plans designate. Alternate Apron Slope may also be used at local jurisdiction's request when approved by the Project Manager.
6. Increase thickness of asphalt concrete and stone base where shown on plans.
7. For curb details, see Std. Drgs. RD700 & RD701.
8. For expansion and contraction joint requirements, see applicable curb and sidewalk standard drawings.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 11-DEC-2009

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

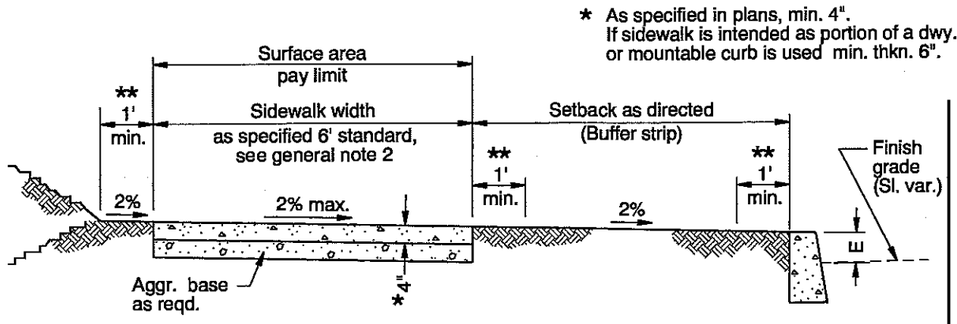
APPROACHES AND NON-SIDEWALK DRIVEWAYS

2008

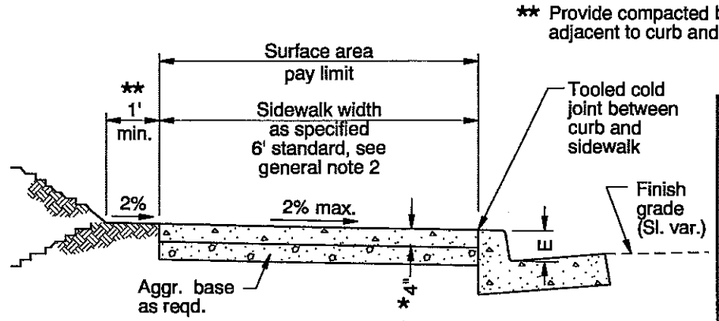
DATE	REVISION DESCRIPTION
06-2009	REVISED NOTE
12-2009	REVISED NOTES

rd715.dgn 31-DEC-2009

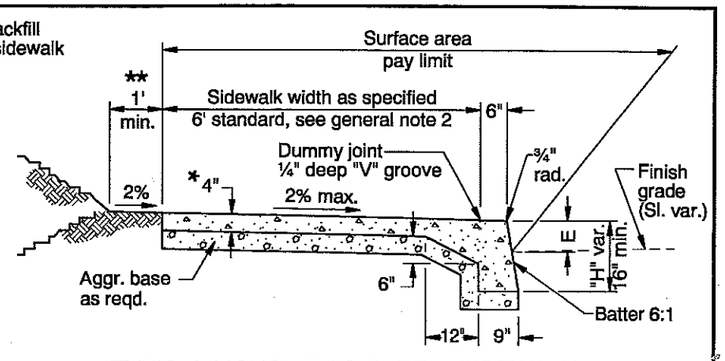
RD715



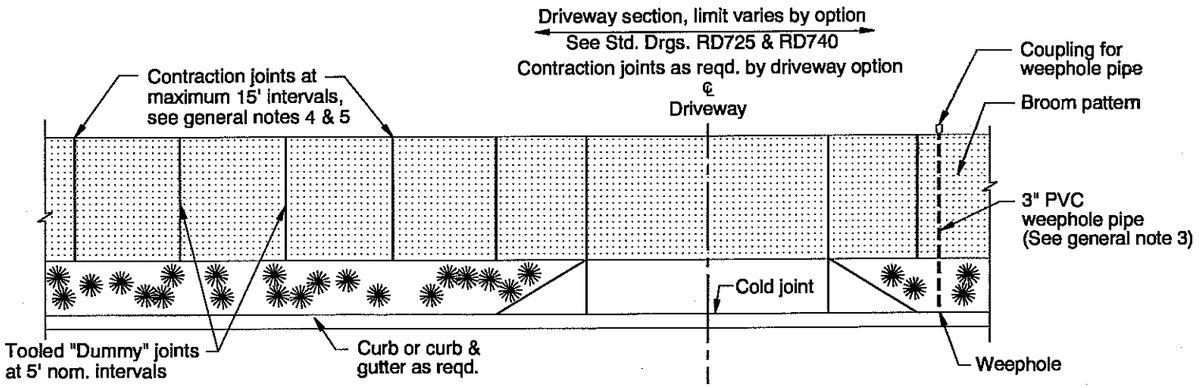
TYPICAL SETBACK SIDEWALK CROSS SECTION
E = curb exposure, see general note 6



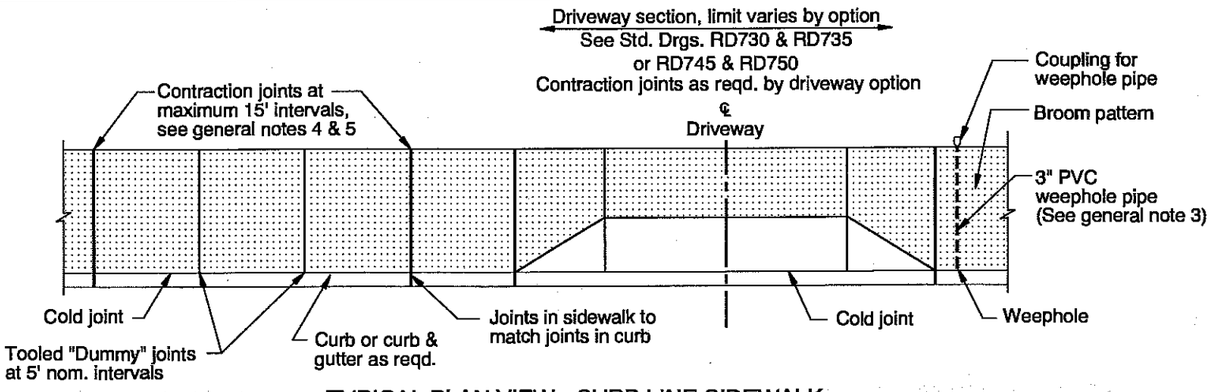
TYPICAL CURB SIDEWALK CROSS SECTION
E = curb exposure, see general note 6



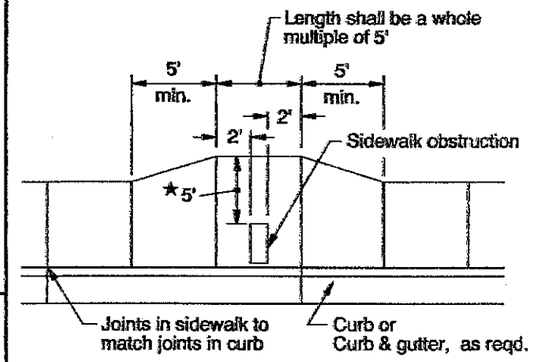
TYPICAL MONOLITHIC CURB & SIDEWALK
E = curb exposure, see general note 6



TYPICAL PLAN VIEW - SEPARATED SIDEWALK

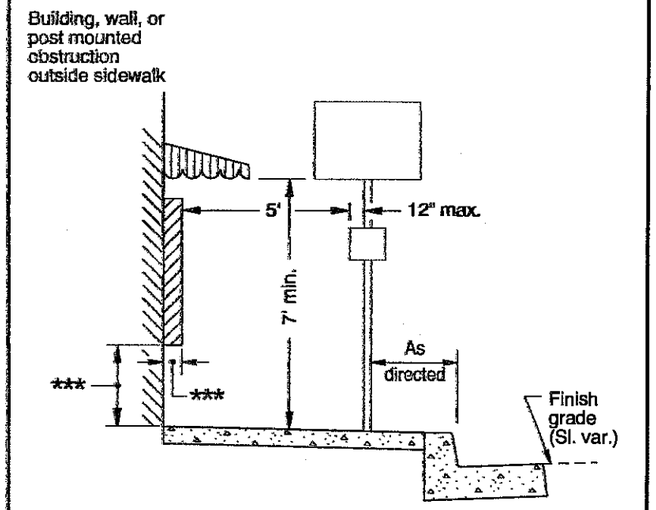


TYPICAL PLAN VIEW - CURB LINE SIDEWALK



★ When site constraints prohibit a 5' passage, the Engineer may direct this to be reduced, but no less than 4'.

REQUIRED SIDEWALK WIDENING AROUND OBSTRUCTIONS



*** Objects with base below 2'-4" may protrude any distance as long as the 5' circulation path is maintained. When an object with a base higher than 2'-4" protrudes further than 4" provide a curb below protrusion to delineate edge.

CLEAR CIRCULATION PATH

GENERAL NOTES FOR ALL DETAILS:

1. Include additional paved or unpaved 2' clearance to vertical faces higher than 5' such as retaining walls, sound walls, fences and buildings.
2. Curb type and sidewalk width as shown on plans or as directed. On sidewalks 8' and wider, provide a longitudinal joint at the midpoint.
3. Install 3" pvc weephole pipes in sidewalks where shown on plans, and allowed by jurisdiction. Place contraction joint over top of pipe.
4. Const. expansion joints at 200' maximum spacing, and at points of tangency, and at ends of each driveway. For monolithic curb & sidewalk, const. expansion joints at 45' maximum spacing.
5. Const. contraction joints at 15' maximum spacing, and at ends of each driveway and ramp.
6. For curb details, see Std. Drgs. RD700 & RD701.
7. Sidewalk details are based on United States Access Board Standards.
8. For driveway details, see Std. Drgs. RD725, RD730, RD735, RD740, RD745 & RD750.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 11-DEC-2009

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

SIDEWALKS

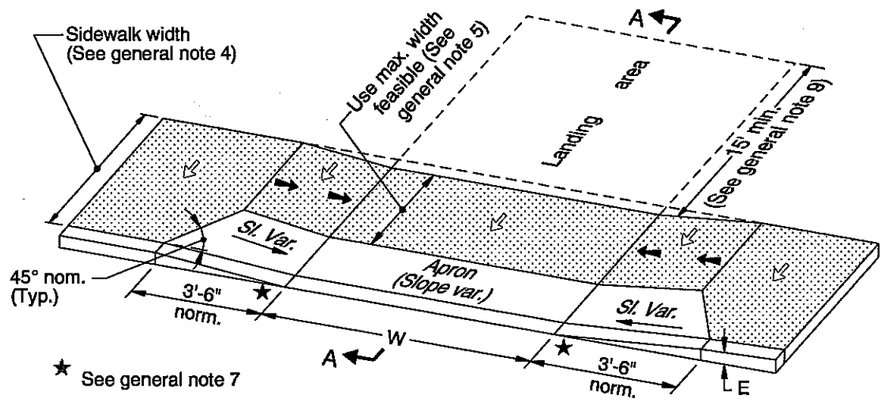
2008

DATE	REVISION DESCRIPTION
06-2009	REVISED DETAILS & NOTES
12-2009	REVISED DETAILS, DETAIL TITLES & NOTES

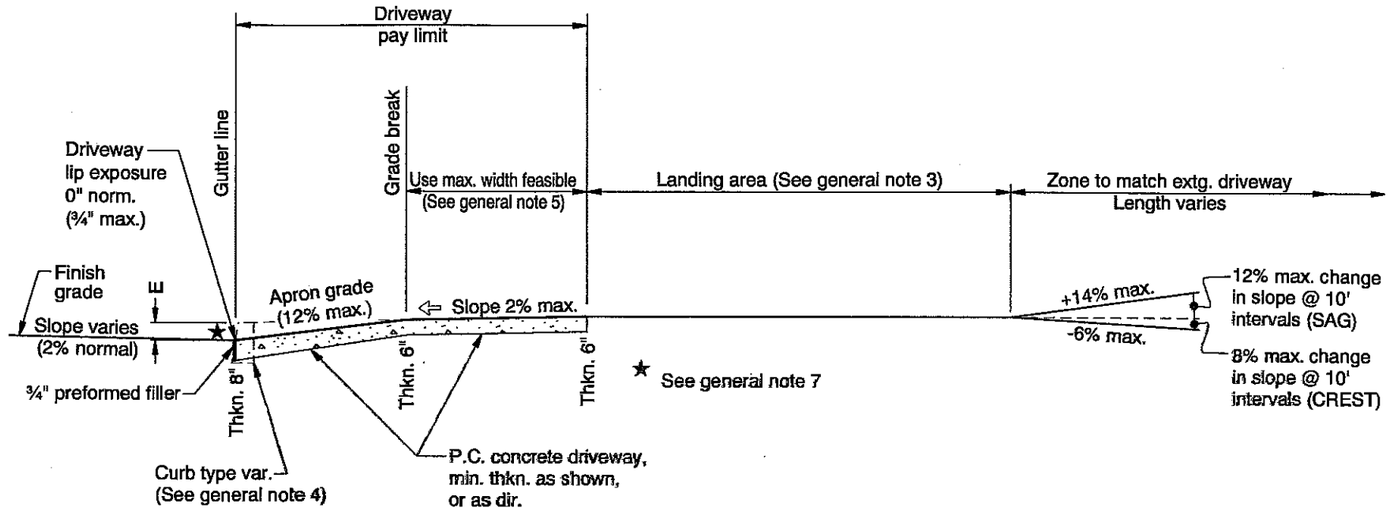
rd720.dgn 31-DEC-2009

RD720

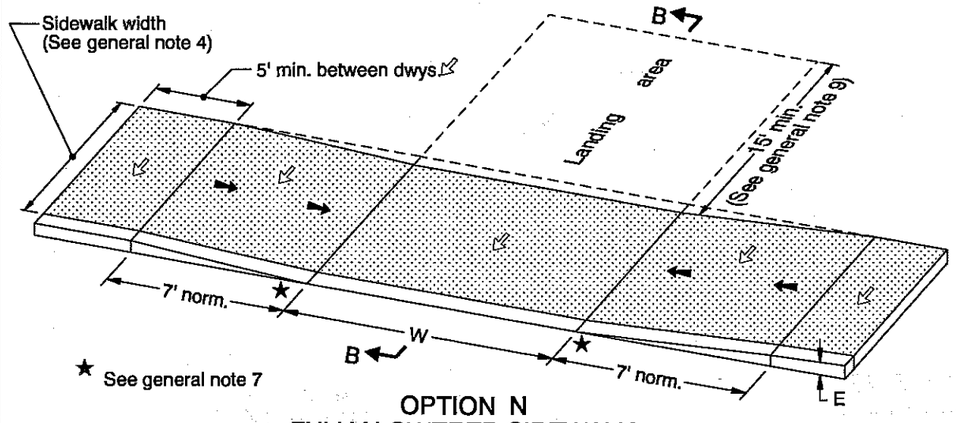
rd750.dgn 12-JUL-2010



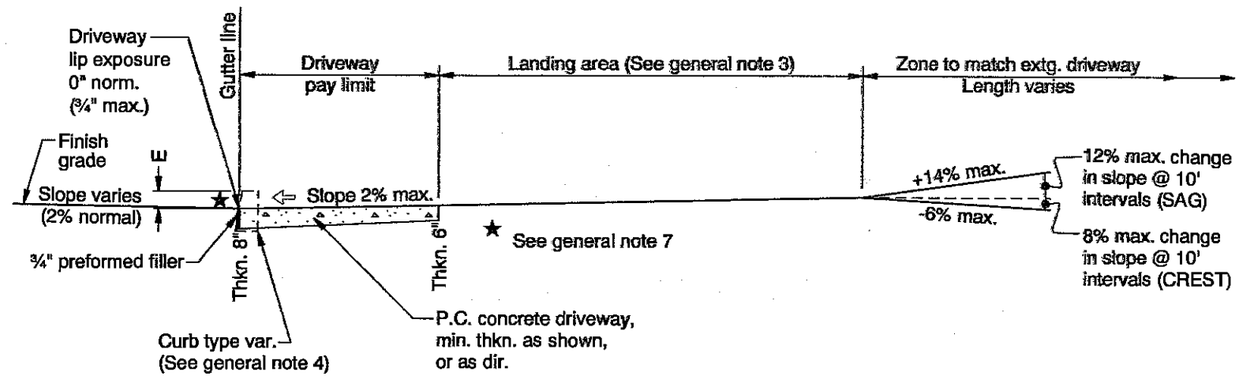
OPTION M
PARTIALLY LOWERED SIDEWALK



SECTION A-A



OPTION N
FULLY LOWERED SIDEWALK



SECTION B-B

GENERAL NOTES FOR ALL DETAILS:

1. Details are based on United States Access Board Standards.
2. Only use details allowed by jurisdiction.
3. The following dimensions are as shown on plans, or as directed: driveway width, sidewalk width, curb exposure, driveway lip exposure, landing area length and width.
4. Curb, gutter, and sidewalk types varies, see plans.
   See Std. Drgs. RD700 & RD701 for curb details.
   See Std. Drg. RD720 for sidewalk details.
5. 4' unobstructed clear passage with slope of 2% max. is required behind driveway apron. 3.5' width is acceptable where sidewalk width is less than standard 6'.
6. Where existing driveway is in good condition, and meets slope requirements, construct only as much as required for satisfactory connection with new work.
7. Check the gutter flow depth at driveway locations to assure that the design flood does not overtop the back of sidewalk at driveway.
   If overtopping occurs place an inlet at upstream side of driveway or perform other approved design mitigation.
8. Tooled joints are required at all driveway slope break lines.
9. 15' min. of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.
10. Monolithic curb & sidewalk shall retain thickened edge through lowered profile, to accomodate driveway use. See Std. Drg. RD720 for details.
11. Any dimensions except those of general note 5 may be amended by local agencies for their use.
12. In alterations, curb ramp slope(s) may be 10% for a max. rise of 6", or 12.5% for a max. rise of 3".

⇦ Slope 2% max.

⬅ Slope 8.33% (1":12") max. (Ramp length 15' max.) (See general note 12)

W Width of driveway

E Curb exposure

NOTE:
This drawing is to be used by local agencies to assist them in the design of driveways on their facilities.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 09-JUL-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

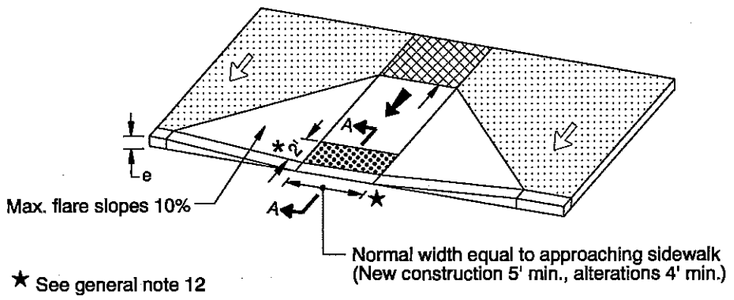
CURB LINE SIDEWALK DRIVEWAYS OR ALLEYS (OPTIONS M & N) LOCAL JURISDICTIONS

2008

DATE	REVISION DESCRIPTION
08-2009	REVISED DETAILS & NOTES
07-2010	REVISED DETAILS & NOTES

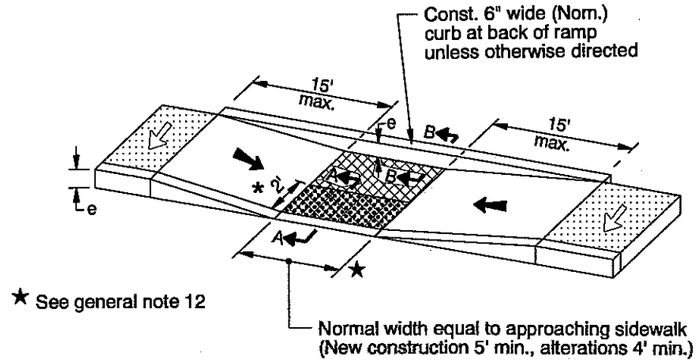
RD750

12-JUL-2010
rd755.dgn

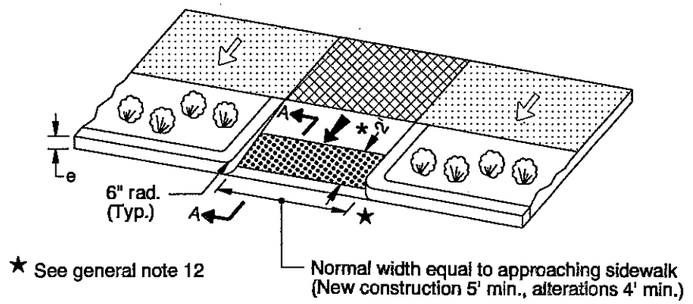


PERPENDICULAR SIDEWALK RAMP DETAIL

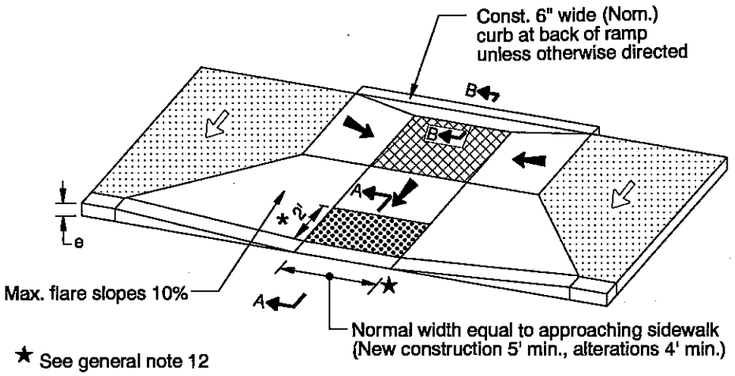
(Use "Parallel Sidewalk Ramp Detail" or "Combination Sidewalk Ramp Detail" when reqd. landing cannot be obtained)



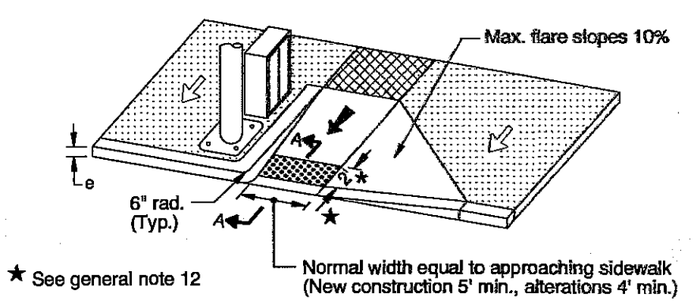
PARALLEL SIDEWALK RAMP DETAIL



PERPENDICULAR SIDEWALK RAMP DETAIL (THROUGH BUFFER STRIP)

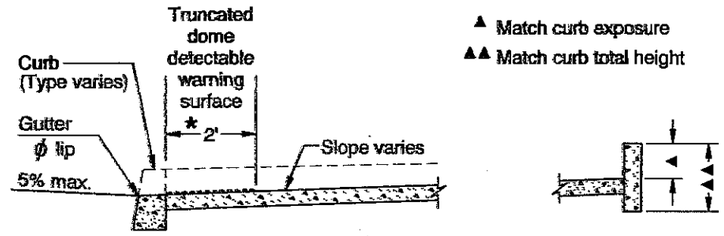


COMBINATION SIDEWALK RAMP DETAIL



PERPENDICULAR SIDEWALK RAMP DETAIL (WITH SINGLE FLARE)

(Use "Parallel Sidewalk Ramp Detail" or "Combination Sidewalk Ramp Detail" when reqd. landing cannot be obtained)



Slope 2% max.

Slope 8.33% (1":12") max. (See general note 10)

Truncated dome detectable warning surface

Landing Area (Min. level area 48" x 48")
For the purposes of this application, a 2% maximum slope (For drainage) is considered level

★ 2' See general note 5

GENERAL NOTES FOR ALL DETAILS:

1. Sidewalk ramp details are based on United States Access Board Standards.
2. See Std. Drgs. RD700 & RD701 for curbs. See Std. Drg. RD720 for sidewalks. See Std. Drgs. TM503 & TM530 for crosswalk markings, widths, etc.
3. Tooled joints are required at all sidewalk ramp slope break lines.
4. Sidewalk curb ramp slopes shown are relative to the true level horizon (Zero bubble).
5. Place truncated dome detectable warning surface in the lower 2' adjacent to traffic of throat of ramp only. For details not shown, see Std. Drg. RD759.
6. Side flares that are not part of the path of travel may be any slope.
7. Sidewalk flare is not necessary where the ramp is protected from pedestrian cross-travel.
8. For the purpose of this drawing, a curb ramp is considered "perpendicular" if the angle between the longitudinal axis of the ramp and a line tangent to the curb at the ramp center is 75° or greater.
9. Ramps for paths intersecting a roadway should be full width of path, excluding flares. When a ramp is used to provide bicycle access from a roadway to a sidewalk, the ramp should be 8' wide.
10. In alterations, curb ramp slope(s) may be 10% for a max. rise of 6", or 12.5% for a max. rise of 3".
11. For sidewalk ramp placement options, see Std. Drgs. RD756 & RD757.
12. Check the gutter flow depth at ramp locations to assure that the design flood does not overtop the back of sidewalk at ramp. If overtopping occurs place an inlet at upstream side of ramp or perform other approved design mitigation.
13. Only use details allowed by jurisdiction.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 09-JUL-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

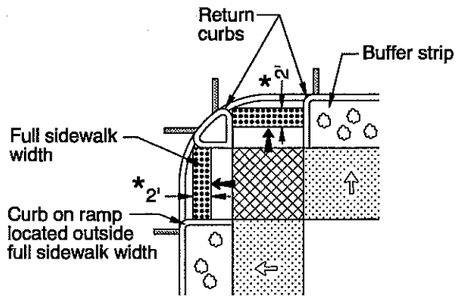
OREGON STANDARD DRAWINGS

SIDEWALK RAMP DETAILS

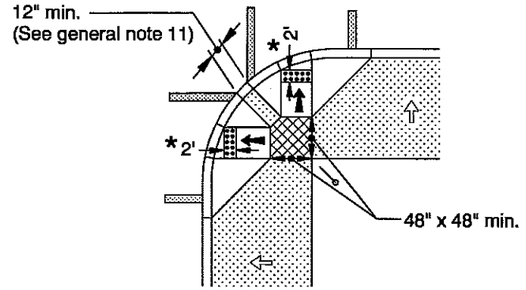
2008

DATE	REVISION DESCRIPTION
06-2009	REVISED DETAILS & NOTES
12-2009	REVISED NOTE
07-2010	REVISED NOTE

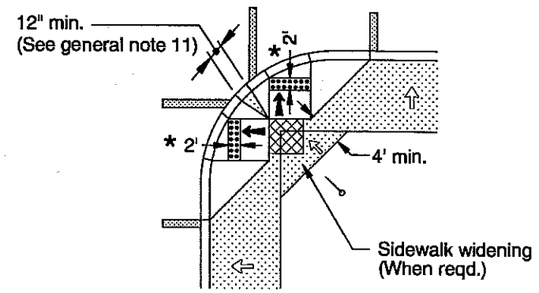
RD755



OPTION A
PERPENDICULAR RAMP WITH LANDSCAPED BUFFER STRIP



OPTION B
PERPENDICULAR RAMP (FOR WIDE SIDEWALKS)



OPTION C
PERPENDICULAR RAMP (FOR NARROW SIDEWALKS)

Marked or intended crossing location

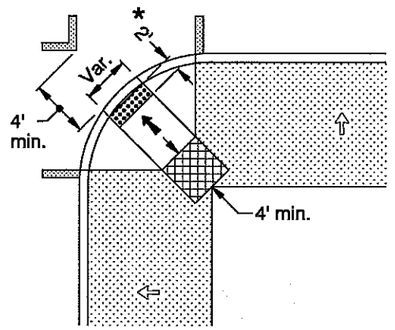
Slope 2% max.

Slope 8.33% (1":12") max.
(Ramp length 15' max.)
(See general note 10)

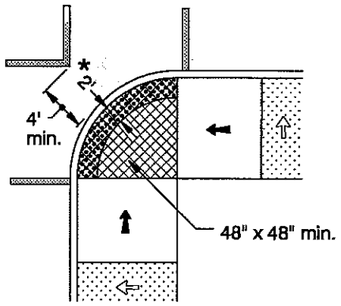
Truncated dome detectable warning surface

Landing Area (Minimum level area 48" x 48")
For the purposes of this application,
a 2% maximum slope (For drainage) is considered level

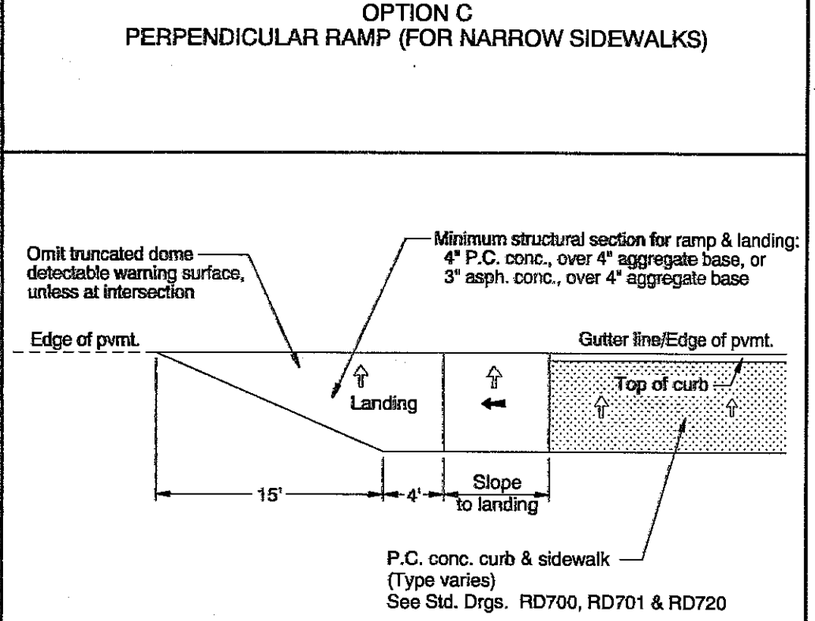
*2' See general note 5



OPTION D
DIAGONAL RAMP (FOR WIDE SIDEWALKS)
Use in alterations only and when site constraints prohibit installing two ramps



OPTION E
DIAGONAL-PARALLEL RAMP (FOR SIDEWALK WIDTHS ≥ RADIUS)
Use in alterations only and when site constraints prohibit installing two ramps



OPTION F
SIDEWALK RAMP AND LANDING (FOR ENDS OF SIDEWALKS)

GENERAL NOTES FOR ALL DETAILS:

1. Sidewalk ramp details are based on United States Access Board Standards.
2. See Std. Drgs. RD700 & RD701 for curbs. See Std. Drg. RD720 for sidewalks. See Std. Drgs. TM503 & TM530 for crosswalk markings, widths, etc. See Std. Drg. RD755 for sidewalk ramp details.
3. Tooled joints are required at all sidewalk ramp slope break lines.
4. Sidewalk curb ramp slopes shown are relative to the true level horizon (Zero bubble).
5. Place truncated dome detectable warning surface in the lower 2' adjacent to traffic of throat of ramp only. For details not shown, see Std. Drg. RD759.
6. Side flares that are not part of the path of travel may be any slope. Check the gutter flow depth to assure that the design flood does not overtop the back of sidewalk. If overtopping occurs place an inlet at upstream side or perform other approved design mitigation.
7. Sidewalk flare is not necessary where the ramp is protected from pedestrian cross-travel.
8. For the purpose of this drawing, a curb ramp is considered "perpendicular" if the angle between the longitudinal axis of the ramp and a line tangent to the curb at the ramp center is 75° or greater.
9. Ramps for paths intersecting a roadway should be full width of path, excluding flares. When a ramp is used to provide bicycle access from a roadway to a sidewalk, the ramp should be 8' wide.
10. In alterations, curb ramp slope(s) may be 10% for a max. rise of 6", or 12.5% for a max. rise of 3".
11. When 2 curb ramps are immediately adjacent as in Options B & C, the curb exposure (e) between the adjacent side flares may range between 3" and full design exposure.
12. Only use options allowed by jurisdiction.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 09-JUL-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

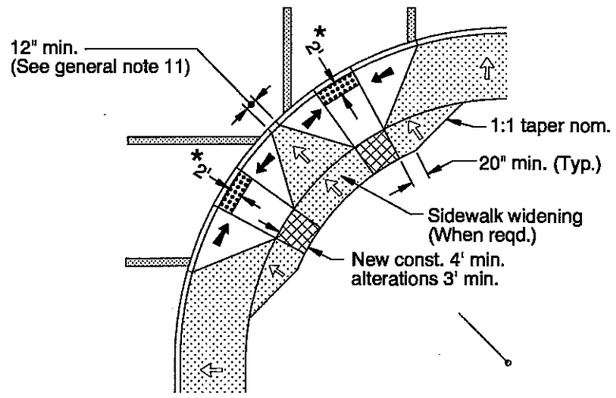
SIDEWALK RAMP PLACEMENT OPTIONS
CURB RADII ≤ 15'

2008

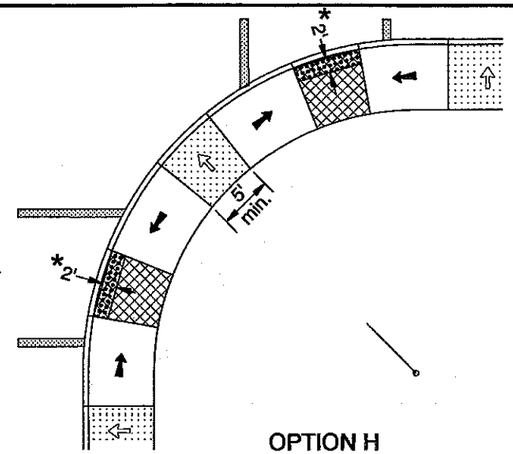
DATE	REVISION DESCRIPTION
06-2009	REVISED & ADDED NOTES
07-2010	REVISED DETAILS & NOTES

12-JUL-2010 rd756.dgn

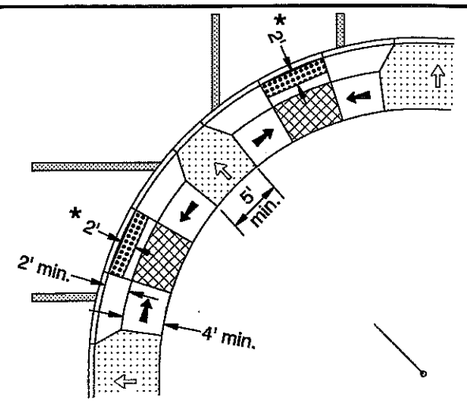
RD756



OPTION G
PERPENDICULAR RAMPS (FOR NARROW SIDEWALKS)

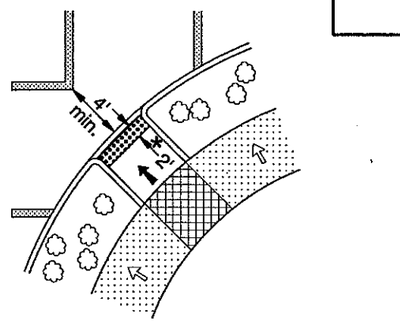


OPTION H
PARALLEL RAMPS (FOR NARROW SIDEWALKS)

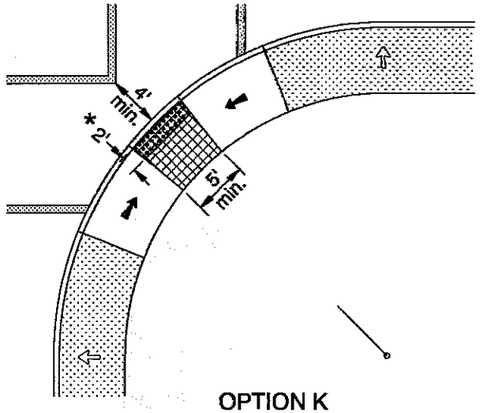


OPTION I
COMBINATION RAMPS (FOR WIDE SIDEWALKS)

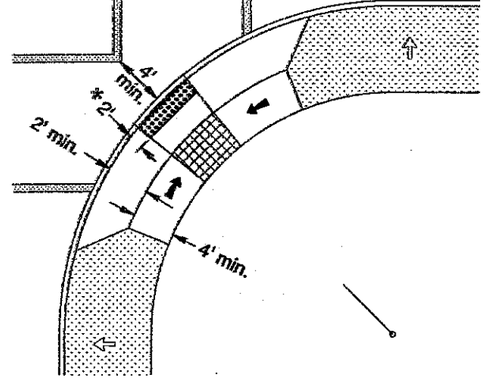
	Marked or intended crossing location	*2'	See general note 5
⇦	Slope 2% max.		Truncated dome detectable warning surface
⬅	Slope 8.33% (1":12") max. (Ramp length 15' max.) (See general note 10)		Landing Area (Min. level area 48" x 48") For the purposes of this application, a 2% maximum slope (For drainage) is considered level



OPTION J
DIAGONAL RAMP WITH LANDSCAPED BUFFER STRIP
Use in alterations only and when site constraints prohibit installing two ramps



OPTION K
DIAGONAL-PARALLEL RAMP (FOR NARROW SIDEWALKS)
Use in alterations only and when site constraints prohibit installing two ramps



OPTION L
DIAGONAL-COMBINATION RAMP (FOR WIDE SIDEWALKS)
Use in alterations only and when site constraints prohibit installing two ramps

GENERAL NOTES FOR ALL DETAILS:

1. Sidewalk ramp details are based on United States Access Board Standards.
2. See Std. Drgs. RD700 & RD701 for curbs. See Std. Drg. RD720 for sidewalks. See Std. Drgs. TM503 & TM530 for crosswalk markings, widths, etc. See Std. Drg. RD755 for sidewalk ramp details.
3. Tooled joints are required at all sidewalk ramp slope break lines.
4. Sidewalk curb ramp slopes shown are relative to the true level horizon (Zero bubble).
5. Place truncated dome detectable warning surface in the lower 2' adjacent to traffic of throat of ramp only. For details not shown, see Std. Drg. RD759.
6. Side flares that are not part of the path of travel may be any slope. Check the gutter flow depth to assure that the design flood does not overtop the back of sidewalk. If overtopping occurs place an inlet at upstream side or perform other approved design mitigation.
7. Sidewalk flare is not necessary where the ramp is protected from pedestrian cross-travel.
8. For the purpose of this drawing, a curb ramp is considered "perpendicular" if the angle between the longitudinal axis of the ramp and a line tangent to the curb at the ramp center is 75° or greater.
9. Ramps for paths intersecting a roadway should be full width of path, excluding flares. When a ramp is used to provide bicycle access from a roadway to a sidewalk, the ramp should be 8' wide.
10. In alterations, curb ramp slope(s) may be 10% for a max. rise of 6", or 12.5% for a max. rise of 3".
11. When 2 curb ramps are immediately adjacent as in Option G, the curb exposure (e) between the adjacent side flares may range between 3" and full design exposure.
12. Only use options allowed by jurisdiction.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 09-JUL-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

SIDEWALK RAMP PLACEMENT OPTIONS CURB RADII > 15'

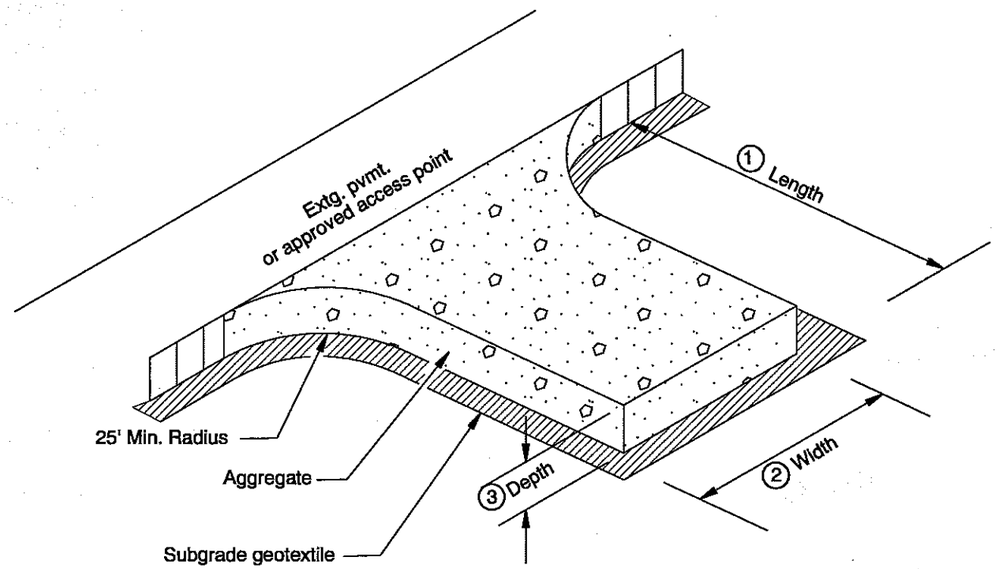
2008

DATE	REVISION DESCRIPTION
06-2009	REVISED DETAILS & NOTES
07-2010	REVISED DETAILS & NOTES

12-JUL-2010 rd757.dgn

RD757

rd1000.dgn 12-31-08



Notes:

1. Length:
   50' min. - for less than 1 acre exposed soil
   100' min. - for greater than 1 acre exposed soil
2. Width:
   20' - or width of extg. approach, whichever is greater.
3. Depth:
   8" min

NOTE: This plan is not a legal engineering document but an electronic duplicate. The original signed by the engineer and approved for publication is kept on file at the Oregon Department of Transportation. A copy may be obtained upon request.

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

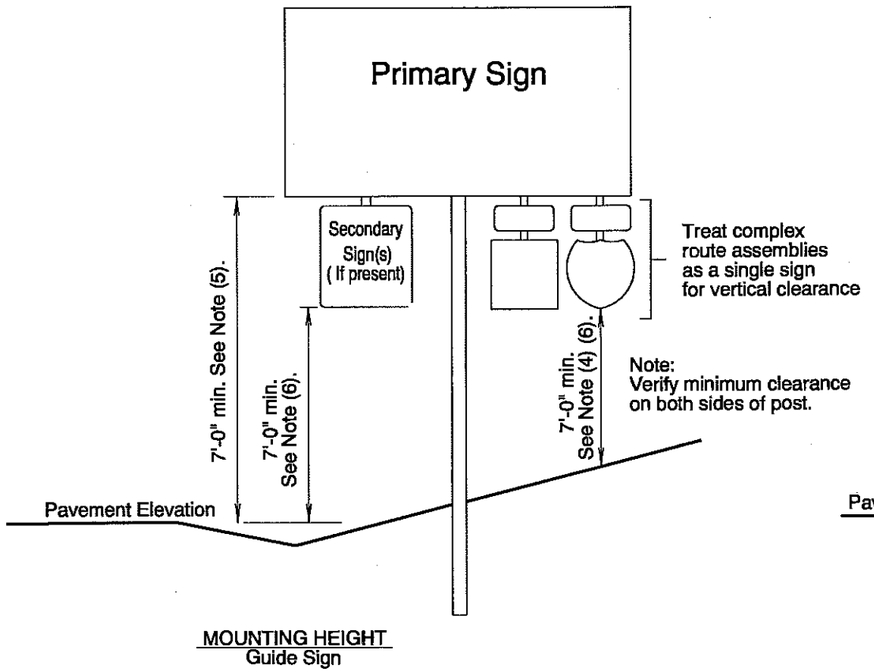
OREGON STANDARD DRAWINGS

CONSTRUCTION ENTRANCES

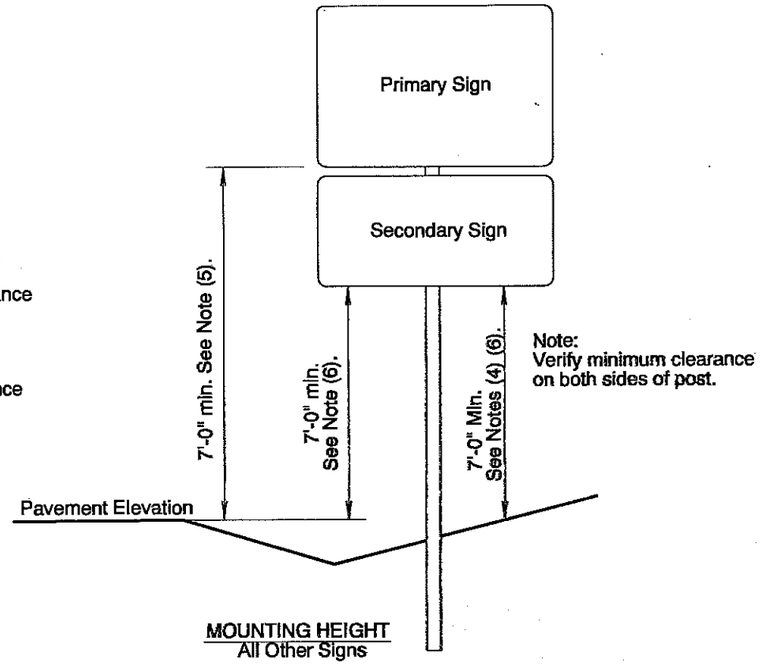
2008

REVISIONS	
DATE	DESCRIPTION

RD1000



MOUNTING HEIGHT
Guide Sign



MOUNTING HEIGHT
All Other Signs

General Installation Notes:

a. Signing details shown on this sheet are intended to convey "typical" conditions only. Individual locations may require installation different from those shown.
For guidance regarding unique installations or exceptions call the Project Sign Designer or Region Traffic Section.

b. Locate breakaway supports away from ditches to avoid problems with erosion, corrosion, debris, maintenance and breakaway performance. See Dwg. No. TM635 for more information.

c. For wood post support details see Dwg. No. TM670.

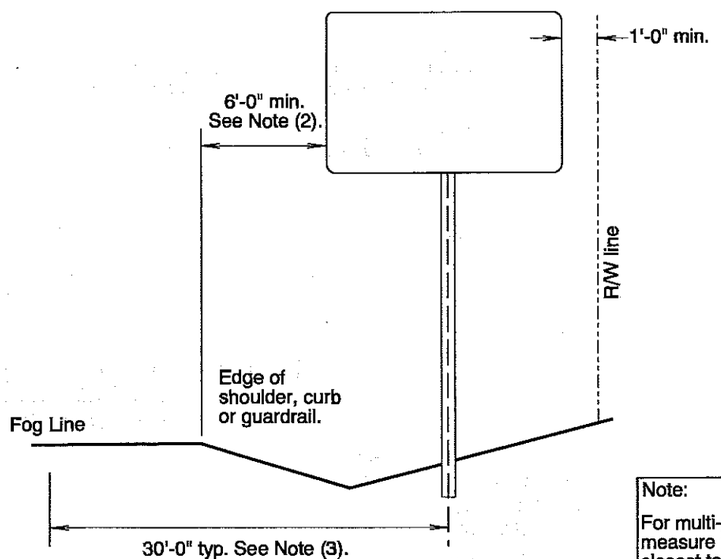
d. For perforated steelsquare tube support details see Dwg. No. TM681.

e. For triangular base breakaway support details see Dwg. No. TM602.

f. For multi-post breakaway support details see Dwg. No. TM600.

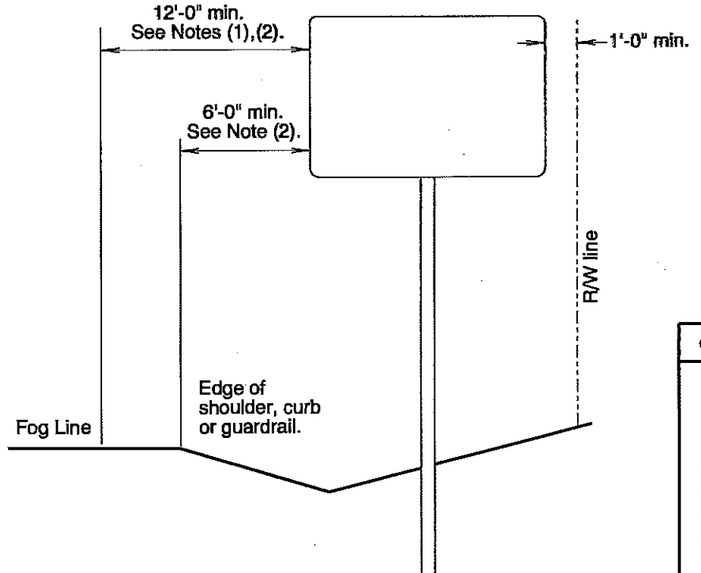
g. Mounting heights should not be more than 3 inches more than the minimum heights shown, where practical.

h. 2" vertical spacing between all signs.



LATERAL OFFSET
Guide Signs

Note:
For multi-post installations measure distance from post closest to roadway.



LATERAL OFFSET
All Other Signs

Notes:

1). 6' minimum if behind barrier.

2). 2' minimum if restricted R/W.

3). 20' for ramp terminals.

4). 8' minimum if bicycle path underneath.

5). 8' minimum if secondary signs attached.

6). 5' minimum if outside clearzone, in rural areas and no pedestrians underneath.

CALC. BOOK NO. _____

BASELINE REPORT DATE 12-10-09

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

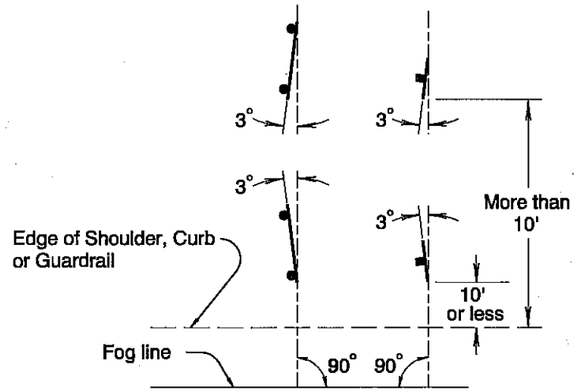
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

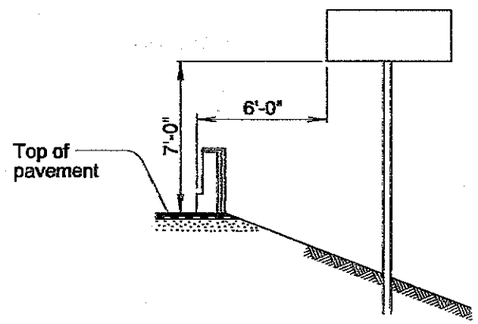
SIGN INSTALLATION DETAILS

2008

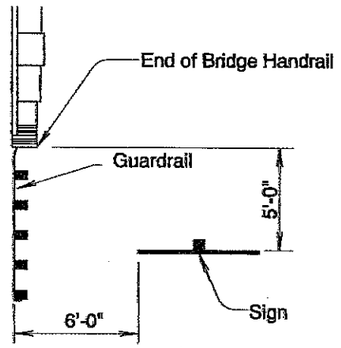
DATE	REVISION DESCRIPTION
12-10-09	Sheet Completely Revised



SIGN PLACEMENT

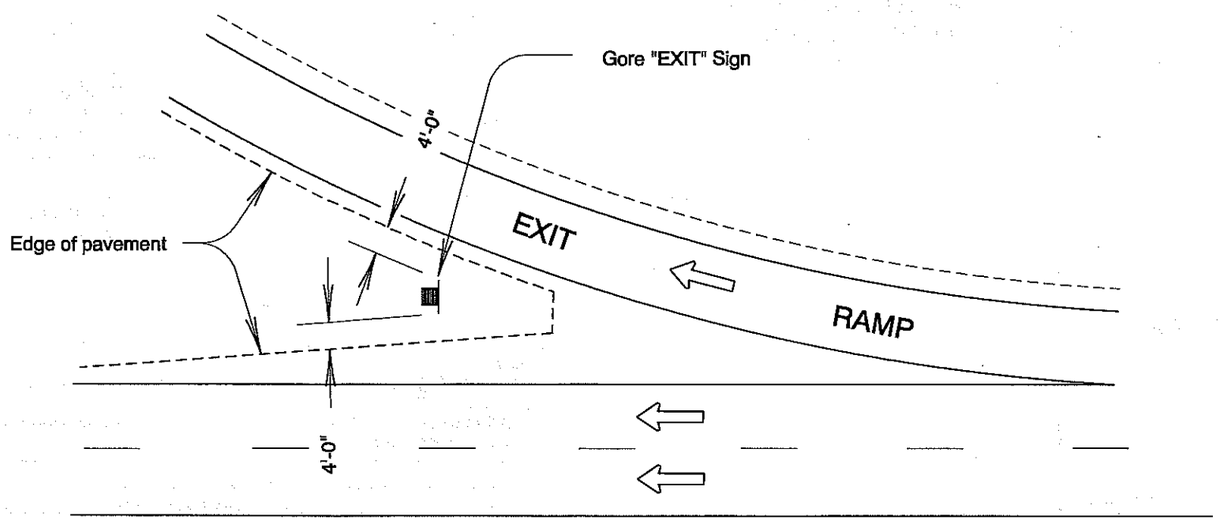


ELEVATION



PLAN

SIGN LOCATION FOR FREEWAY OVERCROSSING
(MINIMUM VALUES)



TYPICAL "EXIT" SIGN INSTALLATION

CALC. BOOK NO. _____	BASELINE REPORT DATE 12-10-09
	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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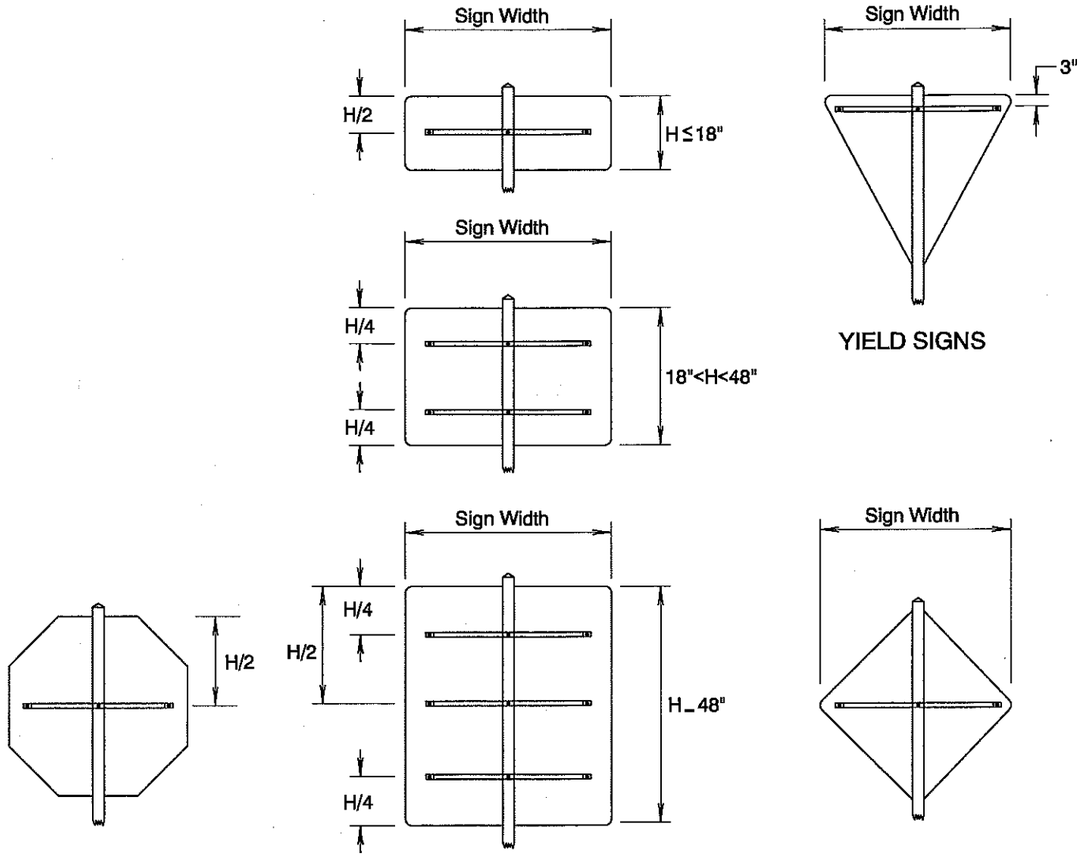
OREGON STANDARD DRAWINGS

MISCELLANEOUS SIGN PLACEMENT DETAILS

2008

DATE	REVISION DESCRIPTION
07-01-09	Updated Drawings To Fit Given Dimensions
12-10-09	Updated Drawings To Fit Given Dimensions For Typical Exit



YIELD SIGNS

STOP SIGN

OTHER SIGNS

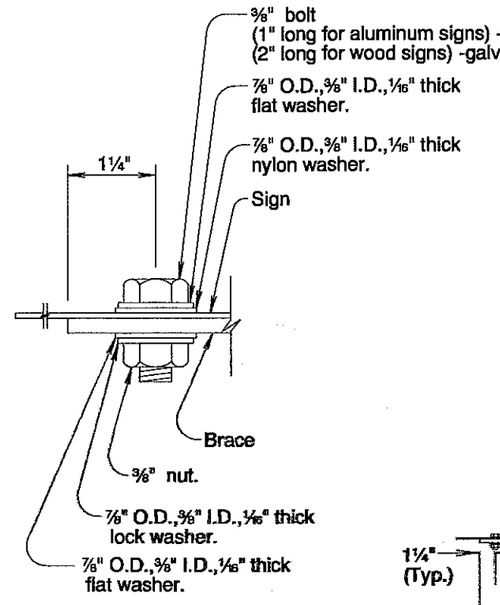
WARNING SIGNS

TYPICAL LOCATION OF BRACING

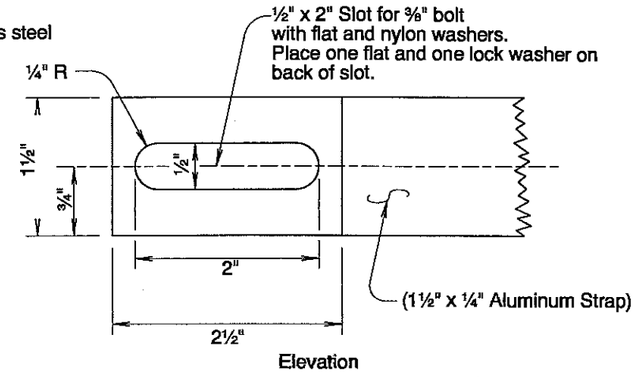
(Adjust location of bracing so that bolts will miss legend)

BRACE LENGTHS **		
POST SIZE	SIGN WIDTH	
	< 60"	≥60"
2" X 2" (Steel)	32½"	56½"
2½" X 2½" (Steel)	32½"	56½"
4" X 4" (Wood)	33½"	57"
4" X 6" (Wood)	35"	57½"
6" X 6" (Wood)	35½"	58"
6" X 8" (Wood)	37½"	59 "

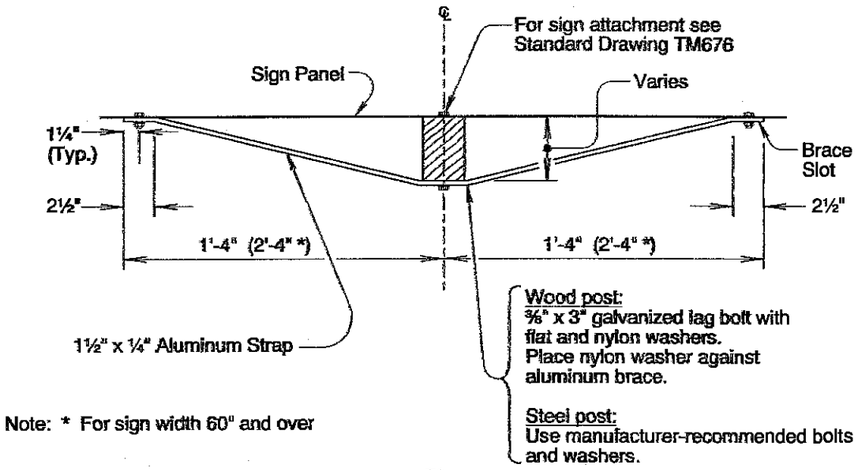
** Verify lengths before bending and attaching to sign and post.



BOLT, NUT AND WASHER INSTALLATION DETAIL



DETAIL OF BRACE SLOT



Note: * For sign width 60" and over

SIGN BRACING

NOTES:
1. Sign braces are only installed when specified in the contract plans, in the special provisions, or by the engineer.
2. When attaching bolts to brace slot, hold bolt head in place and turn nut on opposite side.
3. Use nylon washer against both sides of aluminum brace when using galvanized hardware.

CALC. BOOK NO. _____

BASELINE REPORT DATE 12-10-09

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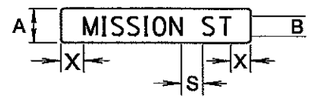
OREGON STANDARD DRAWINGS

SIGN BRACING DETAIL

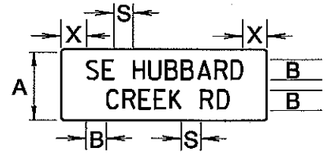
2008

DATE	REVISION DESCRIPTION
07-01-09	Added Sign Brace Details, Added Table And Bolt, Nut And Washer Detail
12-10-09	Sheet Completely Revised

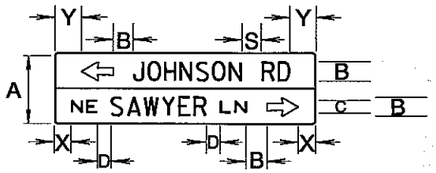


E = BORDER WIDTH F = BORDER RADIUS

	A	B	C	D	E	F
GROUND-MOUNTED SIGN (2-3 LANE HWYS)	12"	6"	4"	2½"	1"	1½"
GROUND-MOUNTED SIGN (4+ LANES AND > 40 MPH)	15"	8"	5"	3⅛"	1"	1½"
GROUND-MOUNTED SIGN (LOCAL ROAD, 25 MPH OR LESS)	9"	5"	3"	1⅞"	½"	1½"
MAST ARM MOUNTED SIGN (12" STANDARD)	21"	12"	8"	5"	1"	3"
MAST ARM MOUNTED SIGN (10" ALTERNATE)	21"	10"	6"	3¾"	1"	3"
STACKED LEGEND SIGN (GROUND-MOUNTED)	21"	6"	N/A	N/A	1"	3"
STACKED LEGEND SIGN (MAST ARM MOUNTED)	30"	8"	5"	3⅛"	1"	3"



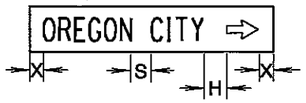
STACKED LEGEND FOR STREET NAME SIGN (GROUND-MOUNTED)

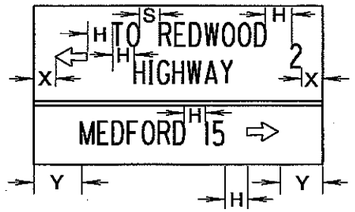


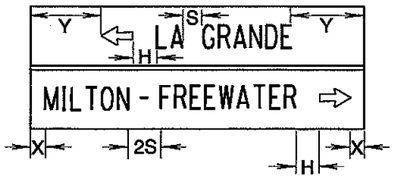
STACKED LEGEND FOR STREET NAME SIGN (MAST ARM MOUNTED)

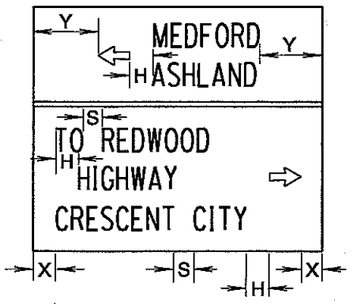
Notes: If 12"C font on mast arm mounted sign yields signs wider than 12', the 10" Alternate may be used.
White border and legend on mast-arm signs are to be ASTM Type IX retroreflective sheeting. Borders shall be flush with edge of sign. Dividers, where used, shall be same width as border.
New Projects: Include mast-arm signs on Signing Plans.
Existing Poles: Perform pole analysis prior to adding or enlarging signs.

STREET NAME SIGN DETAILS

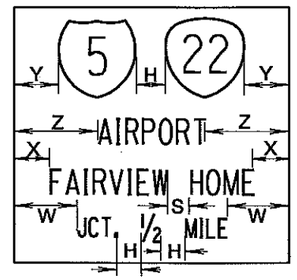


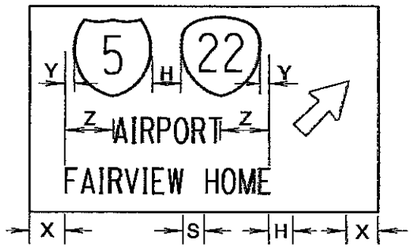


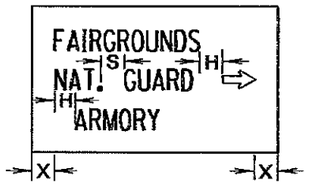


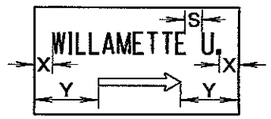


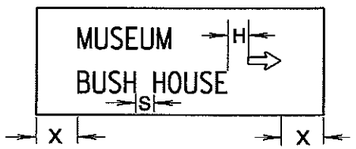
DIRECTIONAL SIGN DETAILS



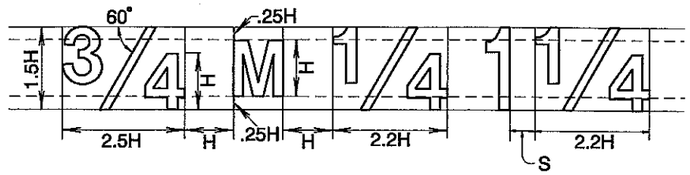








Vertically center arrow between lines of legend.



FRACTIONAL LAYOUT

SERIES (FONT)				
	B	C	D	E
S	.531 H	.625 H	.836 H	1.00 H

SPACING BETWEEN WORDS

H = Letter Height
S = Space between words
W,X,Y & Z = ½ of remaining space

X-Dimension should be approximately the same dimension as the letter Height (H). At a minimum the X-Dimension shall be no less than one-half the letter height (1/2 H)

Letters used on guide signs for streets and roads shall be the Federal Highway Administration's standard rounded capital letter alphabets as shown in the current edition of "Standard Alphabets For Highway Signs."

CALC. BOOK NO. _____ BASELINE REPORT DATE _____

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OREGON STANDARD DRAWINGS

CONVENTIONAL ROADS
DIRECTIONAL SIGN LAYOUT
STREET NAME SIGNS

2008

DATE	REVISION DESCRIPTION

VI=10

tm223.dgn

TM223

F:\Sign Std Drgs Jul 2010 Update\tm200 thru tm233 Sheet Boarder File.dgn :: Default 6/30/2010 10:24:47 AM hwym26p

Note:

In severe wind areas the number of fasteners and mounting holes may be increased as directed by the Engineer.

Place holes for rivets a minimum of ¼" from outside of letter or numbers.

CALC. BOOK NO. _____

BASELINE REPORT DATE 07-01-09

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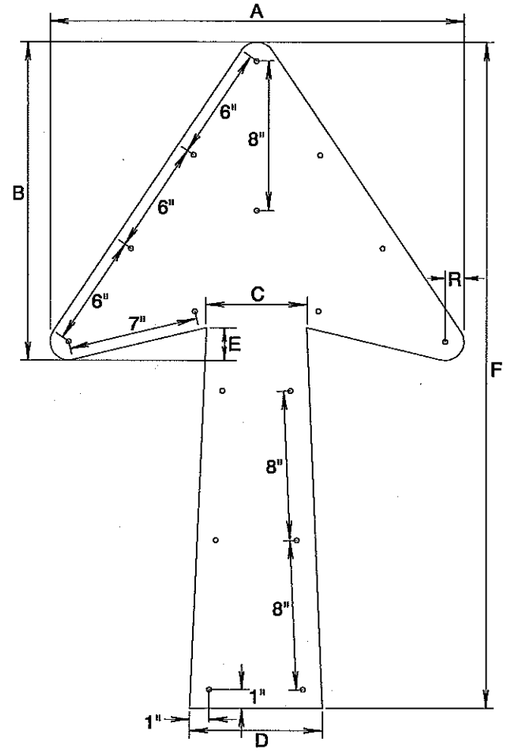
OREGON STANDARD DRAWINGS

MOUNTING DETAILS FOR REMOVABLE LEGEND 4" THROUGH 8" LETTERS/NUMBERS

2008

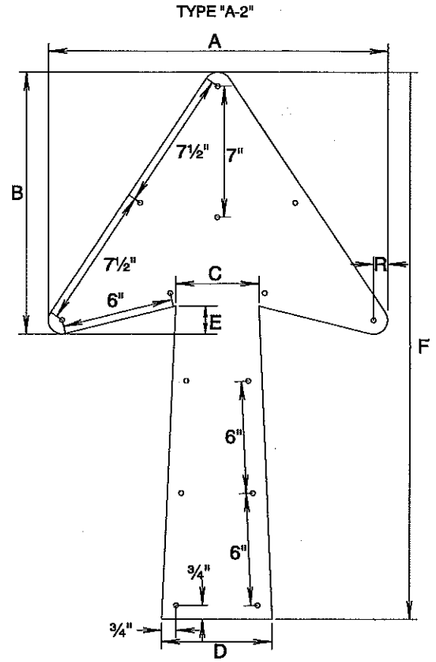
DATE	REVISION DESCRIPTION
07-01-09	Changed Sheet Title To Reflect 4" Through 8"

TYPE "A-1"



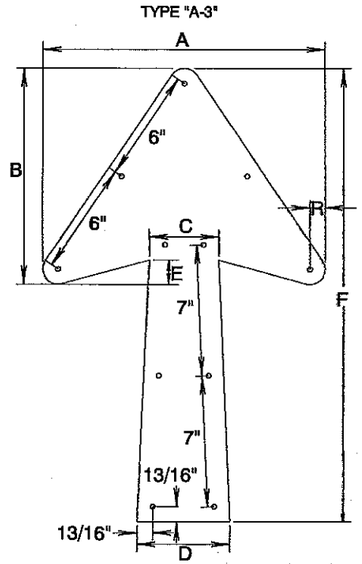
ARROW DIMENSIONS IN INCHES							
A	B	C	D	E	F	R	
22¼	17	5 3/8	7 1/8	1¾	35 5/8	1	

TYPE "A-2"



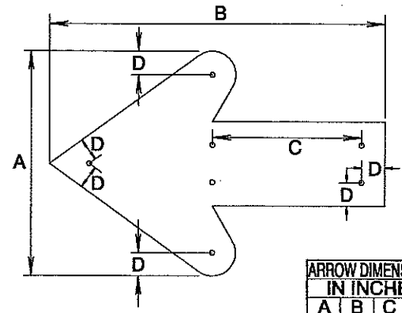
ARROW DIMENSIONS IN INCHES						
A	B	C	D	E	F	R
18¼	14	4½	6	1½	29¼	¾

TYPE "A-3"



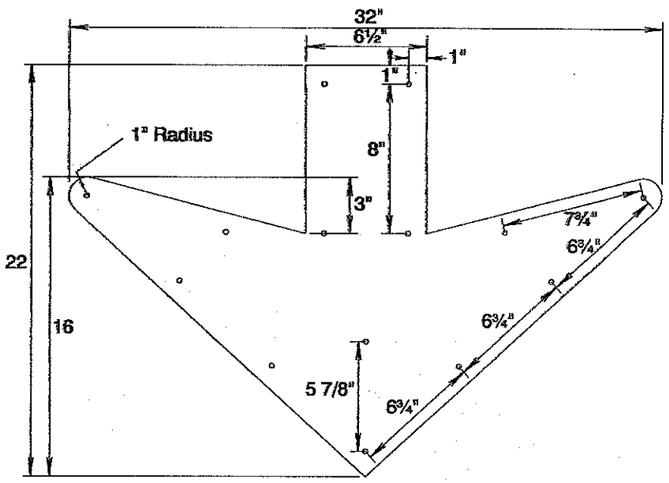
ARROW DIMENSIONS IN INCHES							
A	B	C	D	E	F	R	
15 1/8	11 9/16	3¾	5	1 5/16	24¼	11/16	

TYPE "D"

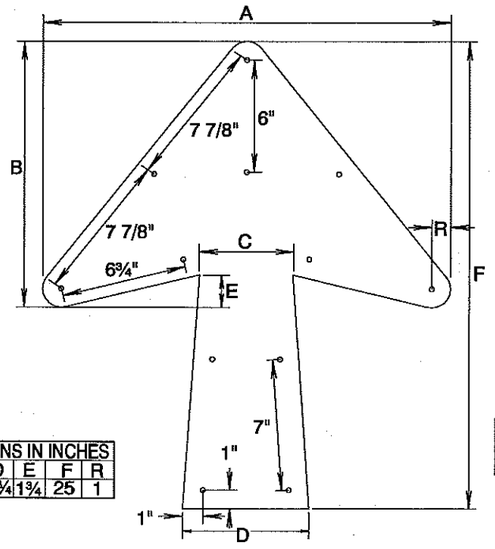


ARROW DIMENSIONS IN INCHES			
A	B	C	D
5	7	3¼	5/8
6	9	4	5/8
8	12	5½	5/8
10	16	7¾	5/8

"DOWN" ARROW

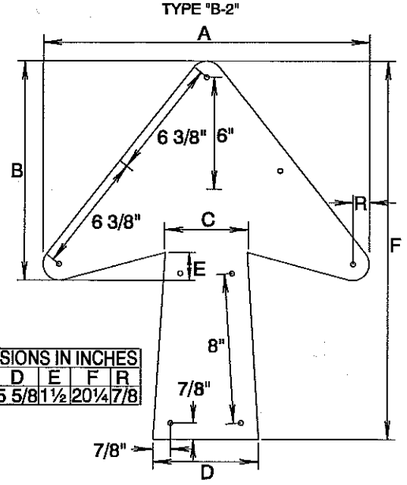


TYPE "B-1"



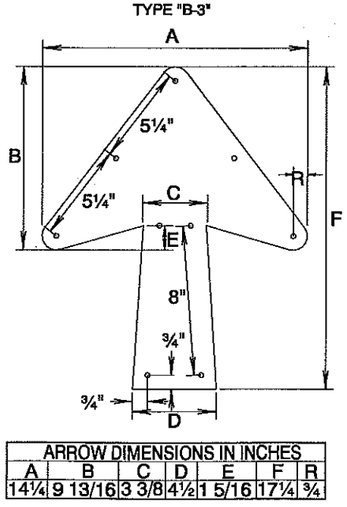
ARROW DIMENSIONS IN INCHES						
A	B	C	D	E	F	R
21 7/8	14¼	5	6¾	1¾	25	1

TYPE "B-2"



ARROW DIMENSIONS IN INCHES							
A	B	C	D	E	F	R	
17½	11¾	4 3/8	5 5/8	1½	20¼	7/8	

TYPE "B-3"



ARROW DIMENSIONS IN INCHES							
A	B	C	D	E	F	R	
14¼	9 13/16	3 3/8	4½	1 5/16	17¼	¾	

Note: In severe wind areas the number of fasteners and mounting holes may be increased as directed by the Engineer.

CALC. BOOK NO. _____

BASELINE REPORT DATE _ 07/01/2010 _____

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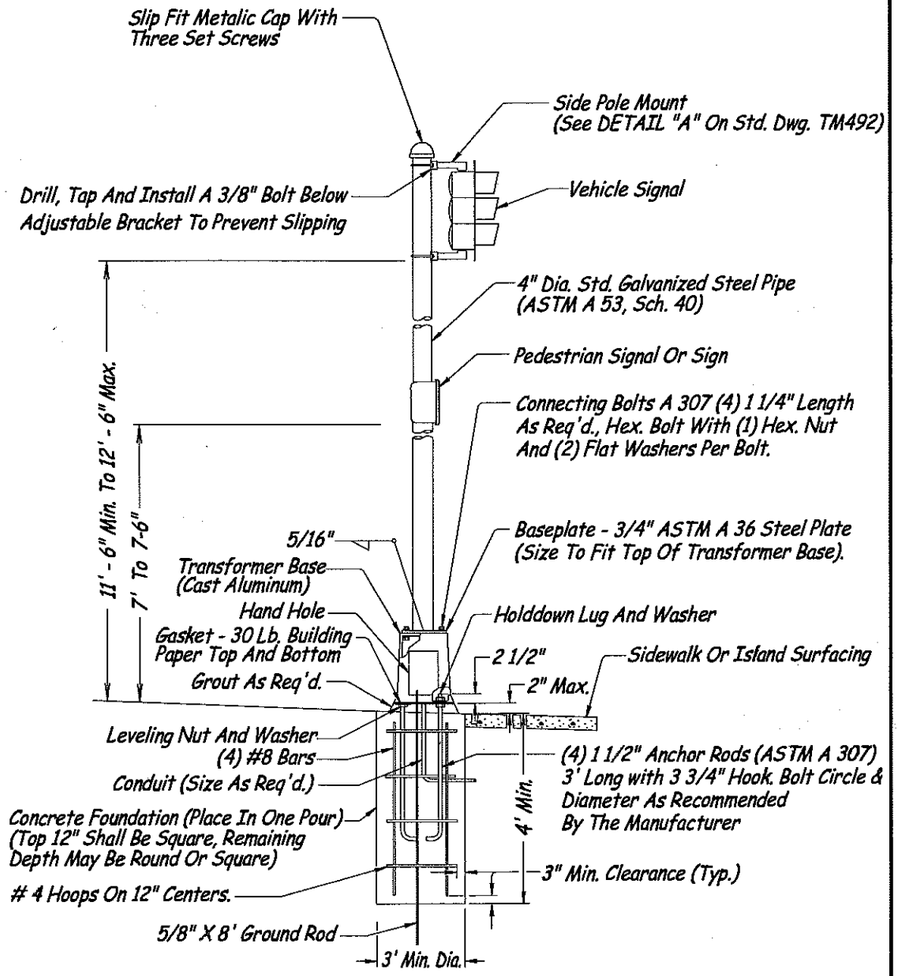
OREGON STANDARD DRAWINGS

MOUNTING DETAILS FOR REMOVABLE LEGEND VARIOUS ARROW SIZES

2008

DATE	REVISION DESCRIPTION
07/01/2010	Added Arrow Types to Sheet

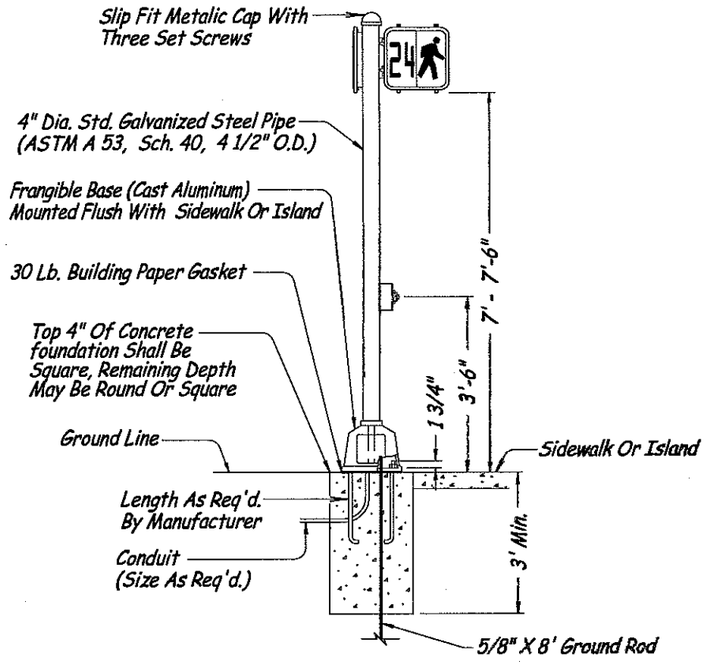
TM233

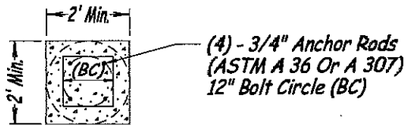


VEHICLE SIGNAL PEDESTAL

NOTE:

Flat Side Of Pedestal Base Can Be Lined Up With Back Of Sidewalk





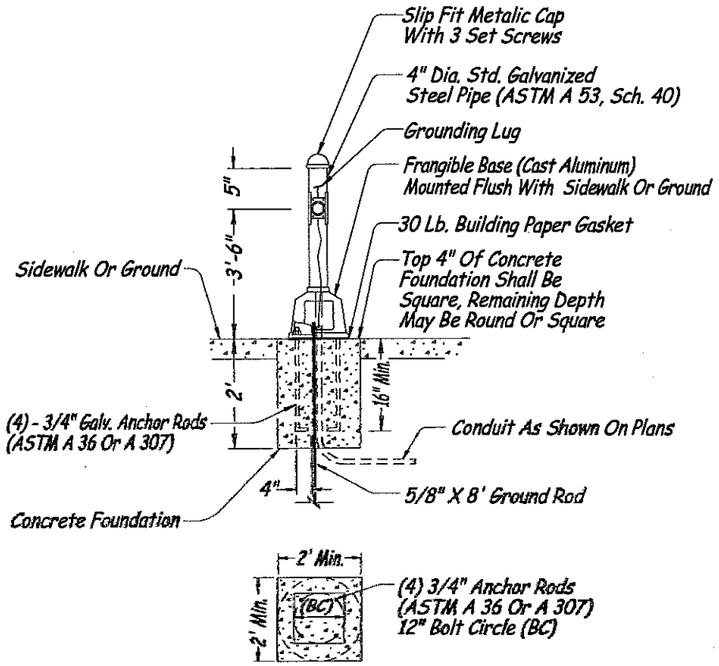
PEDESTRIAN SIGNAL PEDESTAL

GENERAL NOTES:

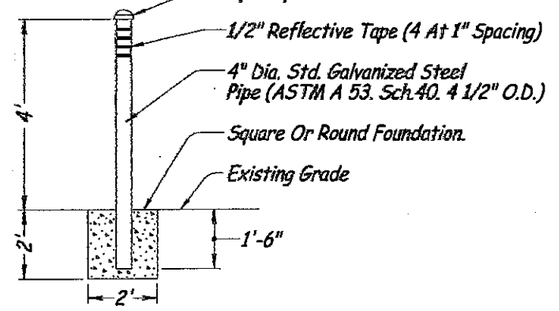
All Surface Joints Where Concrete And Aluminum Meet Shall Be Gasketed With 30 Lb. Building Paper

All Bolts, Nuts And Washers Shall Be Stainless Steel Unless Noted Otherwise

All Pole Entrances Containing Wiring Shall Be Smooth. Nuts, Bolts, And Washers Are Galv. Steel



PEDESTRIAN OR BICYCLE PUSH BUTTON POST



METAL POLE BARRIER DETAIL

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-01-10

ACCOMPANIED BY BASELINE REPORT

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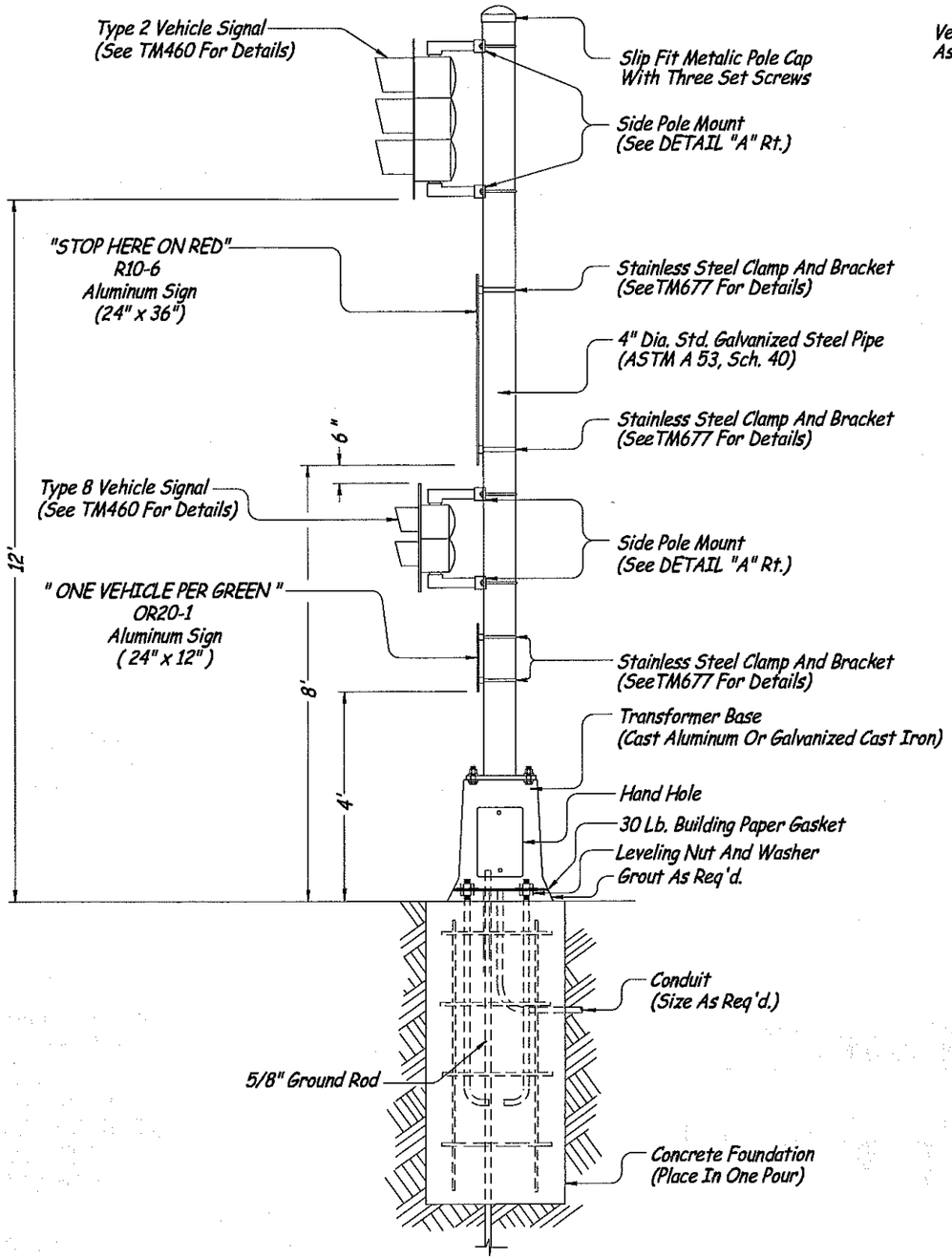
OREGON STANDARD DRAWINGS

VEHICLE, PEDESTRIAN SIGNAL AND PUSHBUTTON MOUNTING OPTION DETAILS

2008

REVISIONS	
DATE	DESCRIPTION
06-2009	REVISED THE DIRECTION OF PEDESTRIAN HEADS
12-2009	CHANGED ANCHOR BOLT TO ANCHOR ROD

TM457

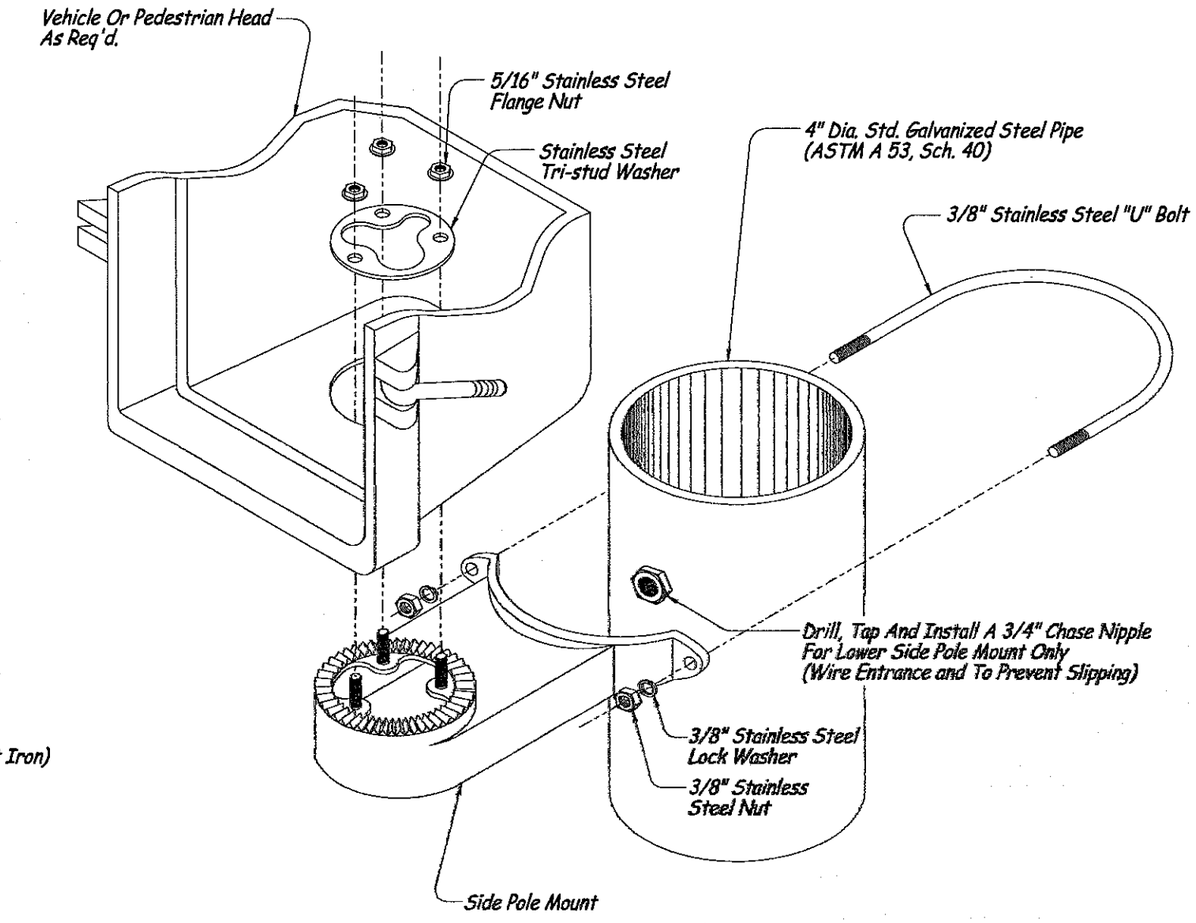


NOTE:

Top 12" Of Concrete Foundation Shall Be Square, Remaining Depth May Be Round Or Square.

RAMP METER PEDESTAL

(See TM457 And TM497 For Additional Details)



DETAIL "A"
SIDE POLE MOUNT

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-01-10

ACCOMPANIED BY BASELINE REPORT

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OREGON STANDARD DRAWINGS

RAMP METER
PEDESTAL DETAILS

2008

REVISIONS	
DATE	DESCRIPTION
06 - 2009	Minor Text And Drafting Revisions
12 - 2009	MINOR TEXT AND DRAFTING REVISIONS

TM492

TM500.dgn 12-31-2008

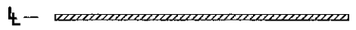
W

4" WHITE LINE

W-2

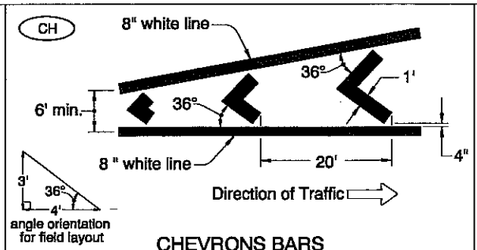
8" WHITE LINE

Y



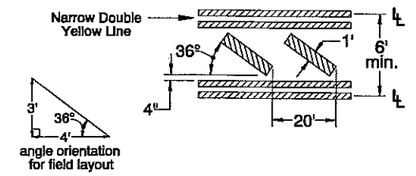
4" YELLOW LINE

CH



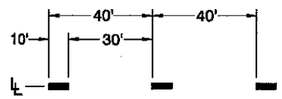
CHEVRONS BARS
1' WHITE BARS AT 20' SPACING

TM



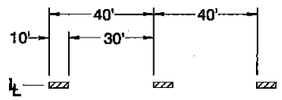
TRANSVERSE MEDIAN BARS
1' YELLOW BARS AT 20' SPACING

WB



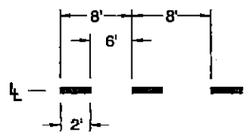
4" WHITE BROKEN LINE

YB



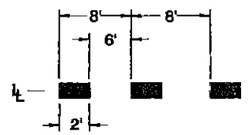
4" YELLOW BROKEN LINE

WD



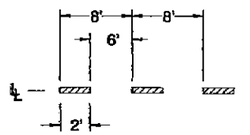
4" WHITE DOTTED LINE
For lane extensions

WD-2



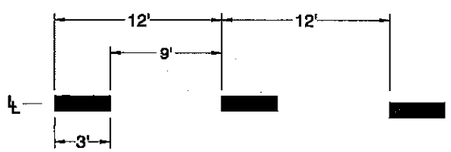
8" WHITE DOTTED LINE
For lane extensions and bike lane extensions

YD



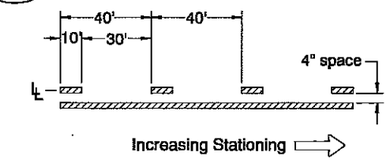
4" YELLOW DOTTED LINE
For lane extensions

LD



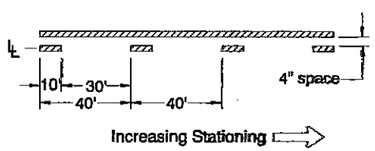
8" WHITE LANE DROP LINE

NPR



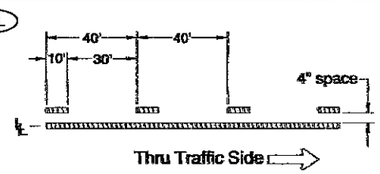
NO-PASS RIGHT
4 " YELLOW LINES

NPL



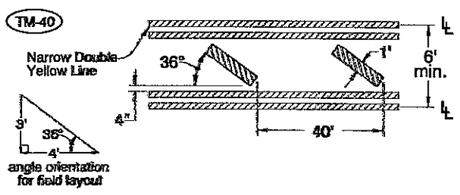
NO-PASS LEFT
4" YELLOW LINES

TWL



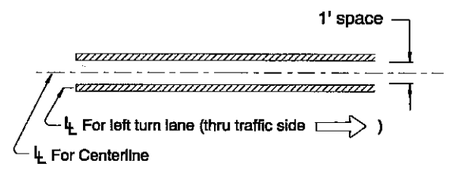
TWO-WAY LEFT TURN
4" YELLOW LINES

TM-40



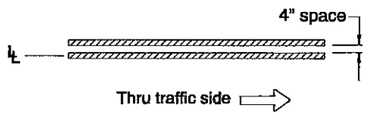
TRANSVERSE MEDIAN BARS
1' YELLOW BARS AT 40' SPACING
For use at painted medians where distance between left turn refuges exceeds 200'

D



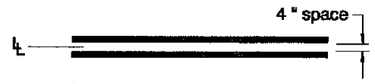
DOUBLE NO-PASS
TWO 4" YELLOW LINES

ND



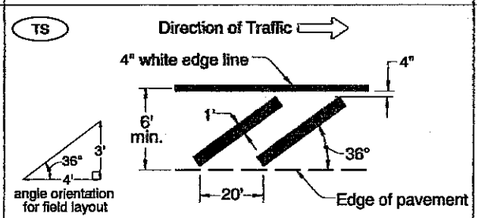
NARROW DOUBLE NO-PASS
TWO 4" YELLOW LINES

NDW



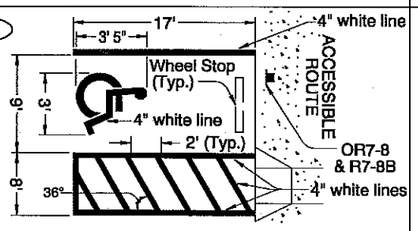
NARROW DOUBLE NO-LANE CHANGE
TWO 4" WHITE LINES

TS



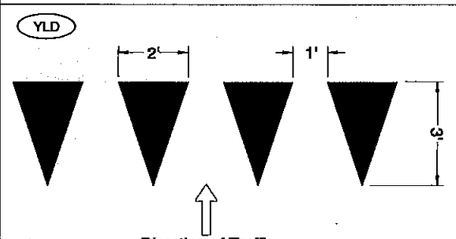
TRANSVERSE SHOULDER BARS
1' WHITE BARS AT 20' SPACING

HC



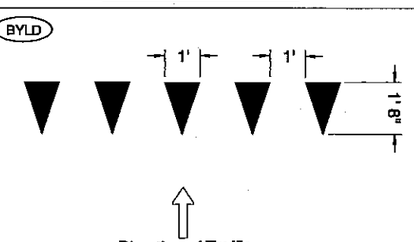
DISABLED PARKING DETAIL (white)

YLD



YIELD LINE (white)

BYLD



BIKE PATH YIELD LINE (white)

LEGEND

Direction Of Traffic, Increasing Stationing Or Thru Traffic Side.

Lane line dimensions are shown on the striping plans.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 12/31/2008

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

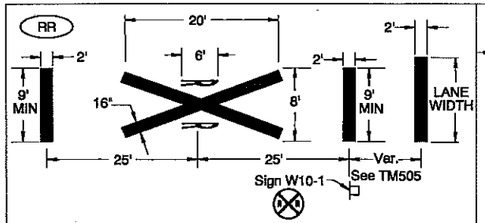
OREGON STANDARD DRAWINGS

PAVEMENT MARKING
STANDARD DETAIL BLOCKS
2008

DATE	REVISION DESCRIPTION
1/2009	Modified NDW lane line location

TM500

RR

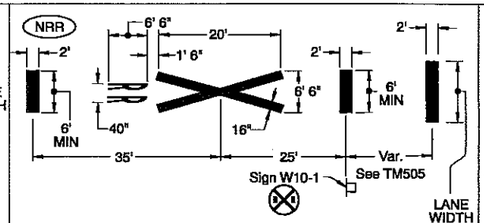


RAILROAD CROSSING (white)

Install per ODOT Rail Crossing Order or as shown.

For letter proportion details, see current version of Standard Highway Signs

NRR

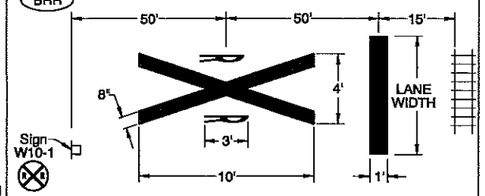


NARROW RAILROAD CROSSING (white)

Install per ODOT Rail Crossing Order or as shown.

For letter proportion details, see current version of Standard Highway Signs

BRR

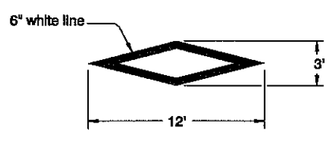


BIKE PATH RAILROAD CROSSING (white)

Install per ODOT Rail Crossing Order or as shown.

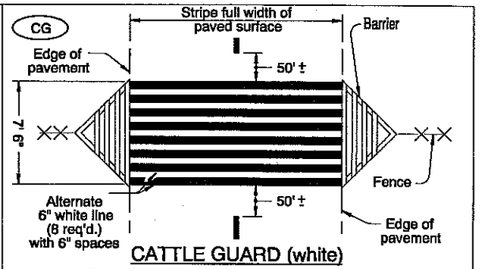
For letter proportion details, see current version of Standard Highway Signs

HOV



HIGH-OCCUPANCY VEHICLE DIAMOND DETAIL (white)

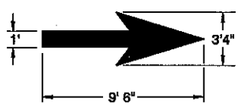
CG



CATTLE GUARD (white)

For barrier and fence details, see Std. Dwg. RD110

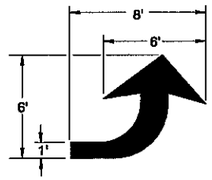
SA



STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

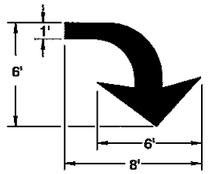
LA



LEFT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

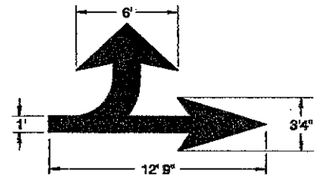
RA



RIGHT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

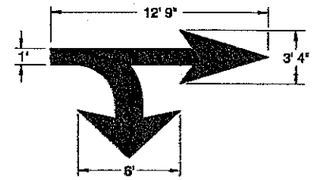
LSA



LEFT TURN STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

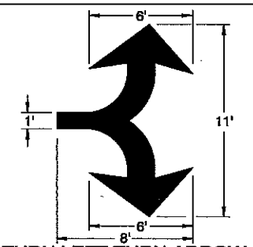
RSA



RIGHT TURN STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

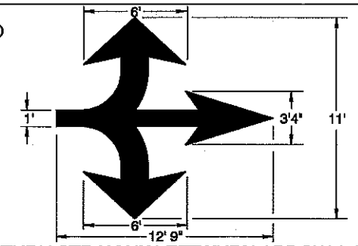
RALA



RIGHT TURN LEFT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

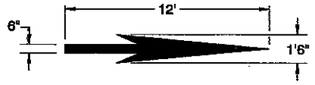
RSLA



RIGHT TURN STRAIGHT LEFT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

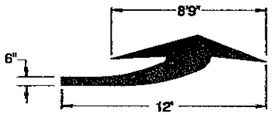
E-SA



ELONGATED STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

E-LA



ELONGATED LEFT TURN ARROW (white)

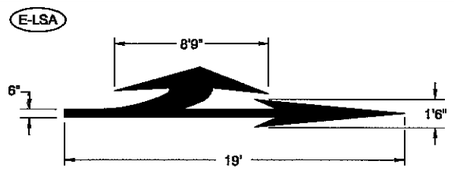
For arrow proportion details, see current version of Standard Highway Signs

E-RA

ELONGATED RIGHT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

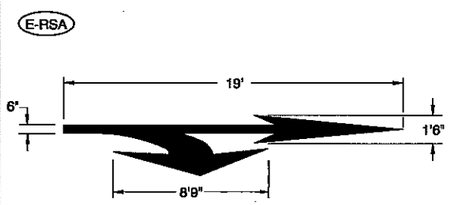
E-LSA



ELONGATED LEFT TURN STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

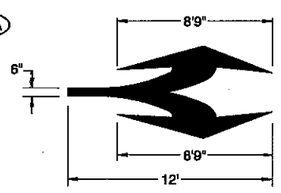
E-RSA



ELONGATED RIGHT TURN STRAIGHT ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

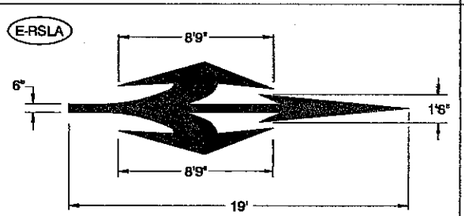
E-RALA



ELONGATED RIGHT TURN LEFT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

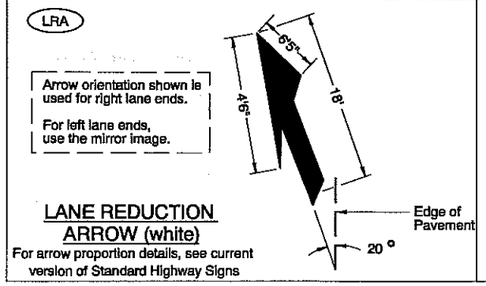
E-RSLA



ELONGATED RIGHT TURN STRAIGHT LEFT TURN ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

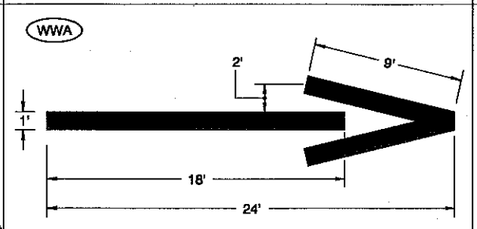
LRA



LANE REDUCTION ARROW (white)

For arrow proportion details, see current version of Standard Highway Signs

WWA



WRONG-WAY ARROW (white)

General Note:

1. Center pavement markings within the lane width.
2. Arrow and letter dimensions nominal, excluding WWA.

LEGEND

Direction Of Traffic

CALC. BOOK NO. N/A

BASELINE REPORT DATE 12/31/2008

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS

PAVEMENT MARKING STANDARD DETAIL BLOCKS

2008

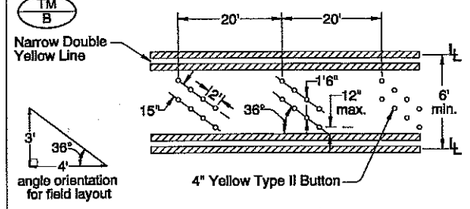
DATE	REVISION DESCRIPTION
1/2009	Additional dimensions added to arrow detail blocks. Modified CG.

TM501

TM502.dgn 12-28-2007

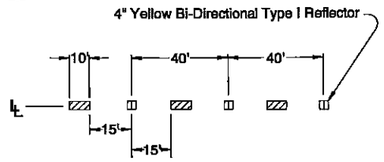
TM (B)

Narrow Double Yellow Line



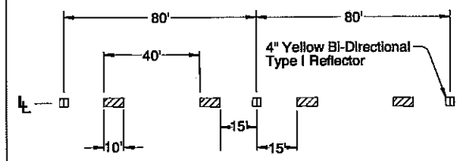
TRANSVERSE MEDIAN BAR SUBSTITUTION BUTTON

YB R-40



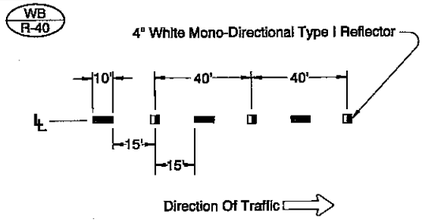
YELLOW BROKEN LINE SUPPLEMENTATION REFLECTORS WITH 4" YELLOW BROKEN LINE

YB R-80



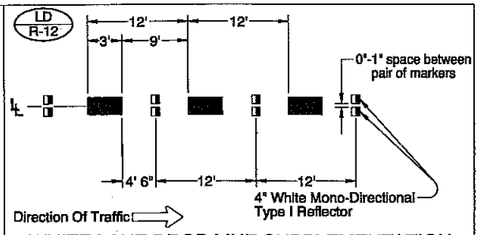
YELLOW BROKEN LINE SUPPLEMENTATION REFLECTORS WITH 4" YELLOW BROKEN LINE

WB R-40



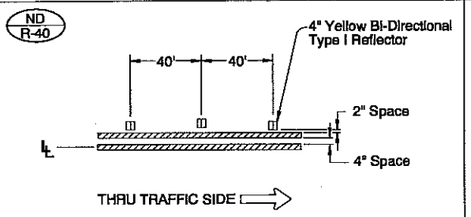
WHITE BROKEN LINE SUPPLEMENTATION REFLECTORS WITH 4" WHITE BROKEN LINE

LD R-12



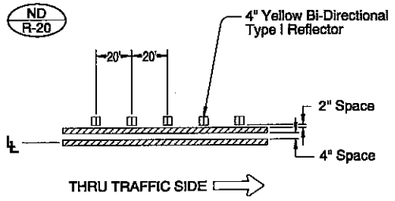
WHITE LANE DROP LINE SUPPLEMENTATION REFLECTORS WITH 8" WHITE LANE DROP LINE

ND R-40



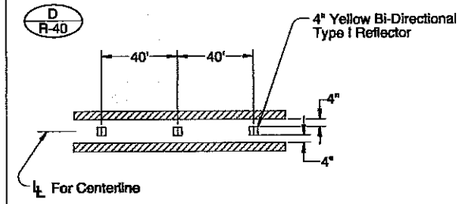
NARROW DOUBLE YELLOW POSITIONING GUIDE REFLECTORS WITH TWO 4" YELLOW LINES

ND R-20



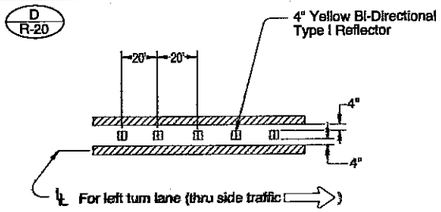
NARROW DOUBLE YELLOW POSITIONING GUIDE REFLECTORS WITH TWO 4" YELLOW LINES

D R-40



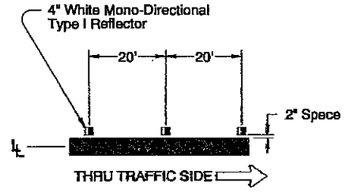
DOUBLE NO-PASS POSITIONING GUIDE REFLECTORS WITH TWO 4" YELLOW LINES

D R-20



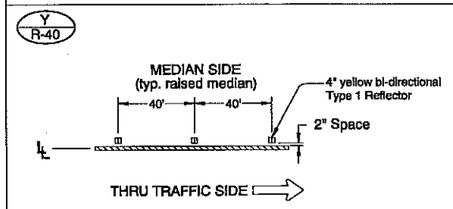
DOUBLE NO-PASS POSITIONING GUIDE REFLECTORS WITH TWO 4" YELLOW LINES

W-2 R-20



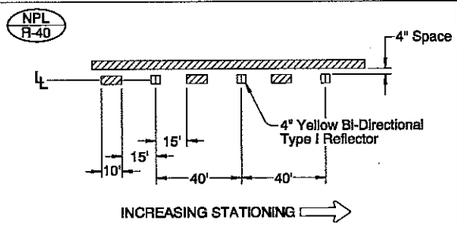
TURN LANE LINE POSITIONING GUIDE REFLECTORS WITH 8" WHITE LINE

Y R-40



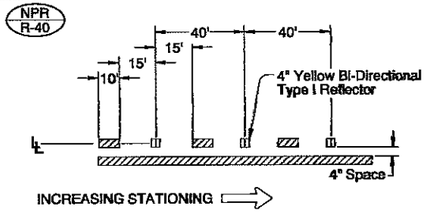
YELLOW LINE POSITIONING GUIDE REFLECTORS WITH 4" YELLOW LINE

NPL R-40



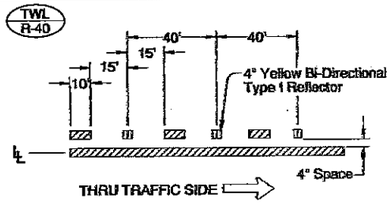
NO-PASS LEFT POSITIONING GUIDE REFLECTORS WITH 4" YELLOW LINES

NPR R-40



NO-PASS RIGHT POSITIONING GUIDE REFLECTORS WITH 4" YELLOW LINES

TWL R-40



TWO WAY LEFT TURN POSITIONING GUIDE REFLECTORS WITH 4" YELLOW LINES

General note:

1.) Surface mount Raised Pavement Markers (RPMs) unless otherwise specified.

LEGEND

⇦ Direction Of Travel, Increasing Stationing Or Thru Traffic Side.

℄ — Lane line dimensions are shown on the striping plans.

◨ Mono-directional crystal white marker reflects white to the left in this symbol

◫ Bi-directional yellow marker reflects yellow both left and right in this symbol

CALC. BOOK NO. N/A

BASELINE REPORT DATE 12/31/2008

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

PAVEMENT MARKING STANDARD DETAIL BLOCKS

2008

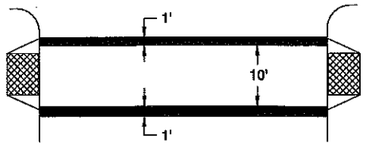
DATE	REVISION DESCRIPTION

TM502

F:\Striping_standard_drawings\std_dwg_revisions\10July\plotfile_TM500s.dgn :: Default 7/7/2010 1:56:01 PM hwyr20s

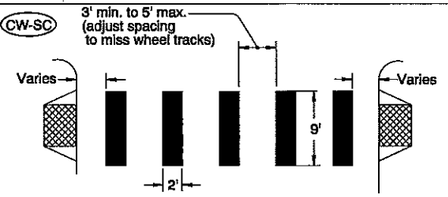
Effective Date: December 1, 2010 - May 31, 2011

CW



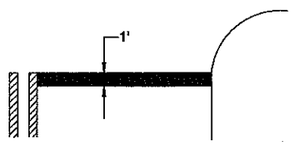
STANDARD CROSSWALK
TWO 1' WHITE BARS
Install per Standard Drawing TM530

CW-SC



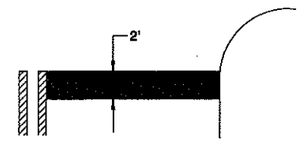
STAGGERED CONTINENTAL CROSSWALK
2' WHITE BARS
Install per Standard Drawing TM530

S



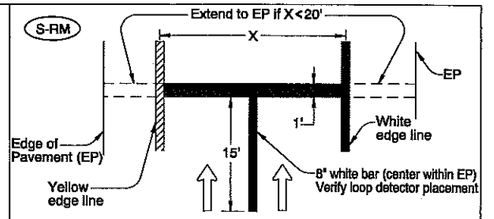
STOP BAR
1' WHITE BAR
Install per Standard Drawing TM530

S-2



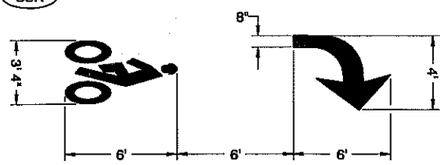
STOP BAR - LARGE
2' WHITE BAR
Install per Standard Drawing TM530

S-RM



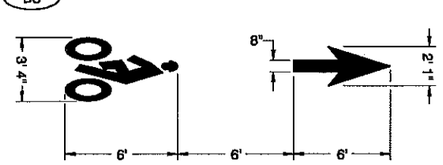
RAMP METER STOP BAR
1' & 8" WHITE BARS
For multi-lane ramp meter applications

BSR



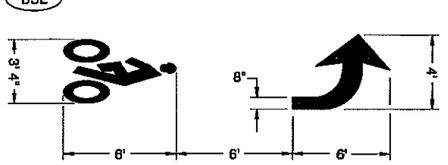
BIKE RIGHT TURN STENCIL (white)
Center marking within lane width
For proportion details, see current version of Standard Highway Signs

BS



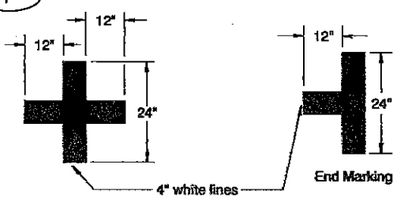
BIKE LANE STANDARD STENCIL (white)
Center marking within lane width
For proportion details, see current version of Standard Highway Signs

BSL



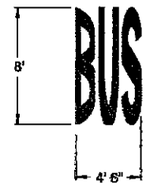
BIKE LEFT TURN STENCIL (white)
Center marking within lane width
For proportion details, see current version of Standard Highway Signs

P



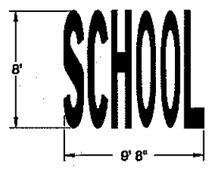
ON-STREET PARKING DETAIL (white)

BUS



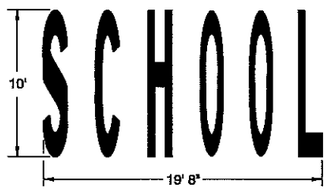
BUS (white)
Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

SCH



SCHOOL (white)
Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

SCH-LG



SCHOOL - LARGE (white)
Center marking within width of two lanes
For letter proportion details, see current version of Standard Highway Signs

CRS-LG

CROSSING - LARGE (white)
Center marking within width of two lanes
For letter proportion details, see current version of Standard Highway Signs

XNG

X-ING (white)
Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

ON

ONLY (white)
Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

General Note:

1. Arrow, letter, and bike symbol dimensions nominal.

LEGEND

⇦ Direction of Travel

CALC. BOOK NO. N/A

BASELINE REPORT DATE 7/6/2009

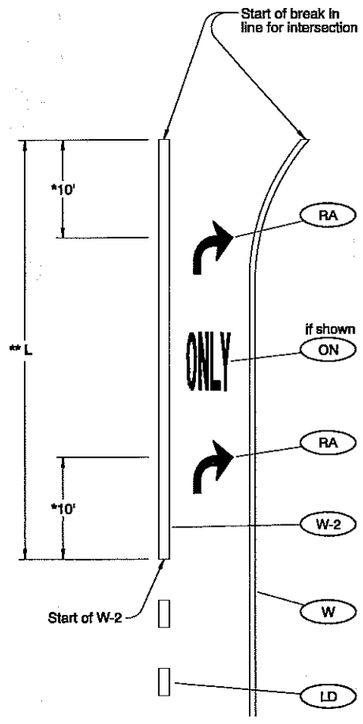
NOTE: All material and workmenship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

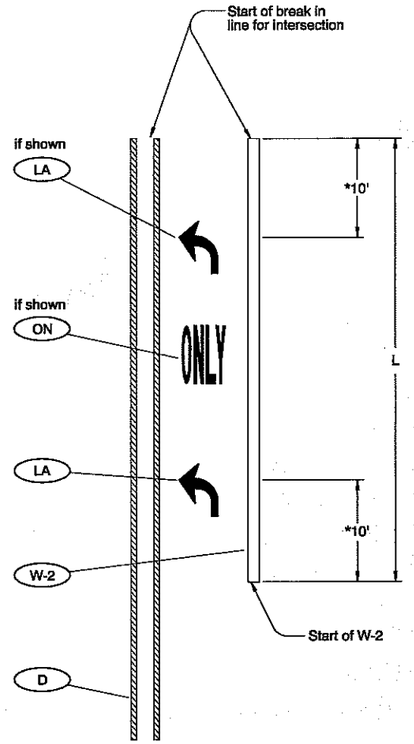
PAVEMENT MARKING
STANDARD DETAIL BLOCKS
2008

DATE	REVISION DESCRIPTION
1/2009	Modified S-RM detail block.
7/2009	Added general note 1



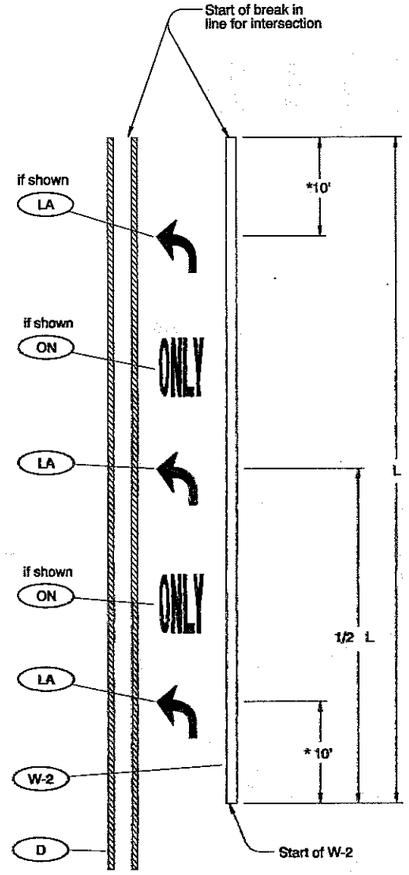
LANE USE ARROW
PLACEMENT - TRAP LANE

DETAIL "A"



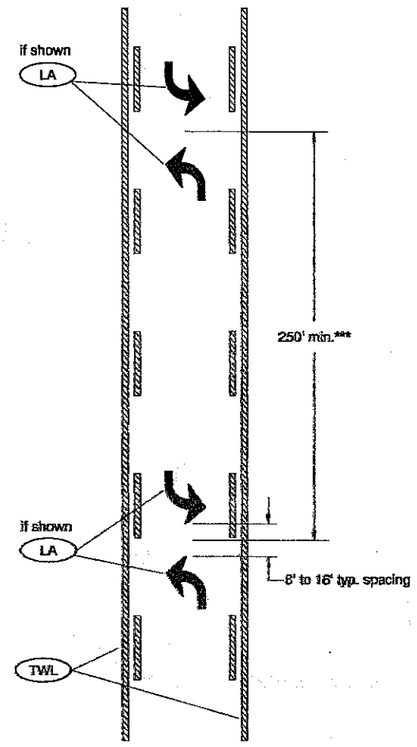
LANE USE ARROW
PLACEMENT (L≤400')

DETAIL "B"



LANE USE ARROW
PLACEMENT (L>400')

DETAIL "C"



TWO-WAY LEFT TURN LANE
ARROW MARKING PLACEMENT

DETAIL "D"

General Notes:

1.) Center pavement marking legends within the lane.

2.) Placement of lane use arrows with respect to the 8" wide white line (W-2) channelization shown in details "A", "B" and "C" apply to both left and right turn lanes.

* 15' when installing elongated arrows.

** When L is greater than 400', install 3rd lane use arrow at ½ L as shown in (Lane Use Arrow Placement Detail "C").

*** Double arrows to be placed at even intervals, proportioned within block or as shown.

To be accompanied by Standard Dwg. Nos. TM500 thru TM503

CALC. BOOK NO. N/A

BASELINE REPORT DATE 07/02/2008

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

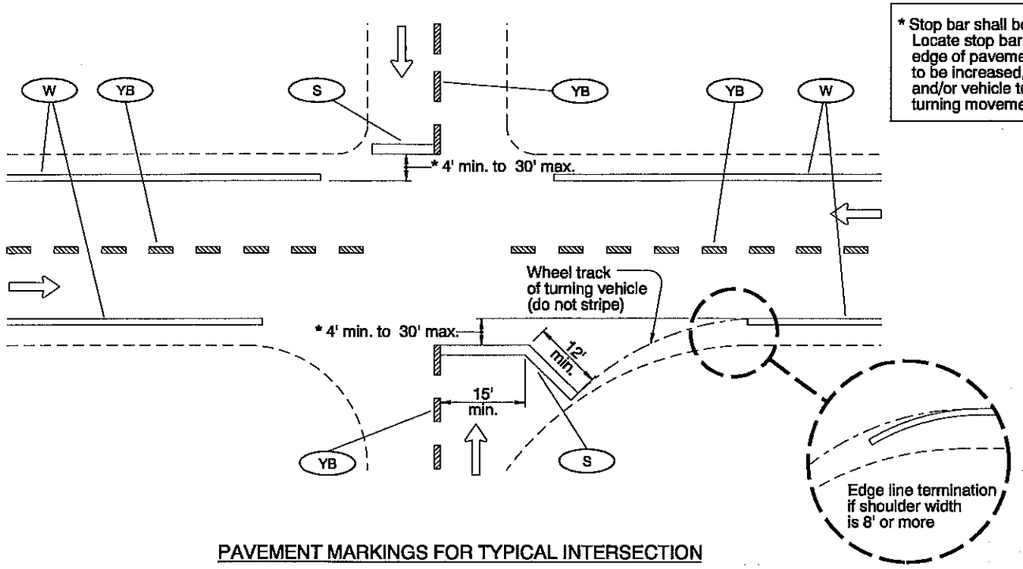
OREGON STANDARD DRAWINGS

TURN ARROW MARKING DETAILS

2008

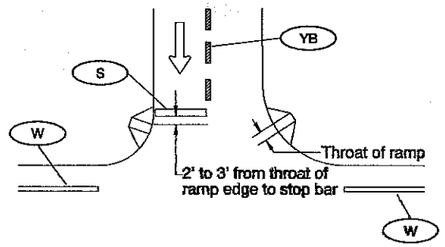
DATE	REVISION DESCRIPTION

TM525

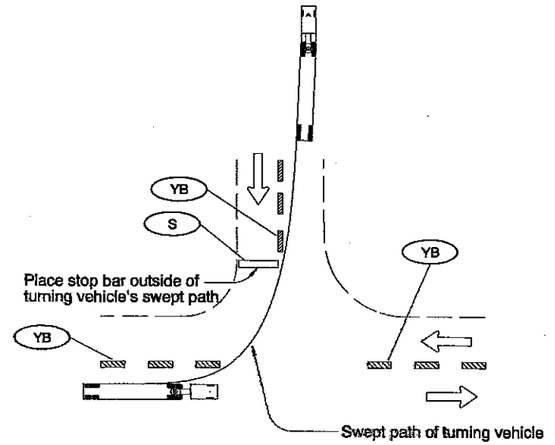


PAVEMENT MARKINGS FOR TYPICAL INTERSECTION

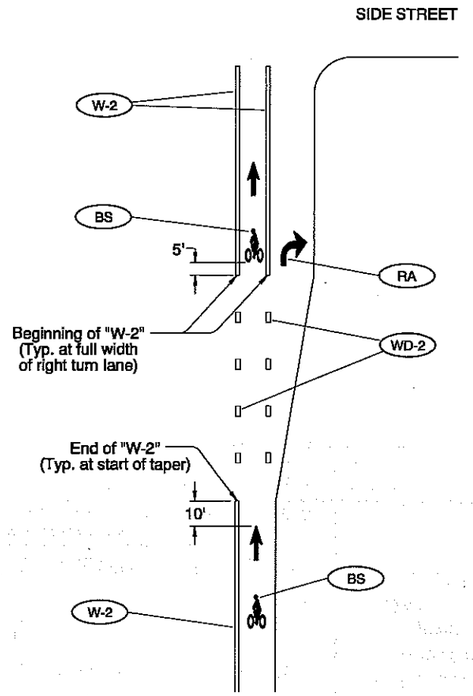
* Stop bar shall be placed as near as possible to the intersecting traveled way. Locate stop bar 4' min. to 30' max. in advance of the extended fog line, edge of pavement, or curb face. Minimum stop bar distance may need to be increased, depending on location of pedestrian ramps (see Detail "A") and/or vehicle turn radii (see Detail "B"). Field verify sight distance and truck turning movements.



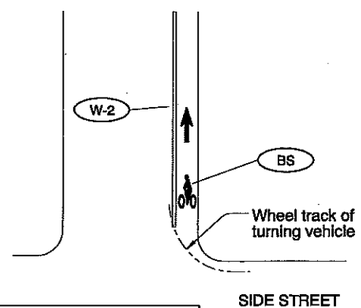
Detail "A"
STOP BAR PLACEMENT WITH RESPECT TO PEDESTRIAN RAMPS



Detail "B"
STOP BAR PLACEMENT WITH RESPECT TO TURN RADII

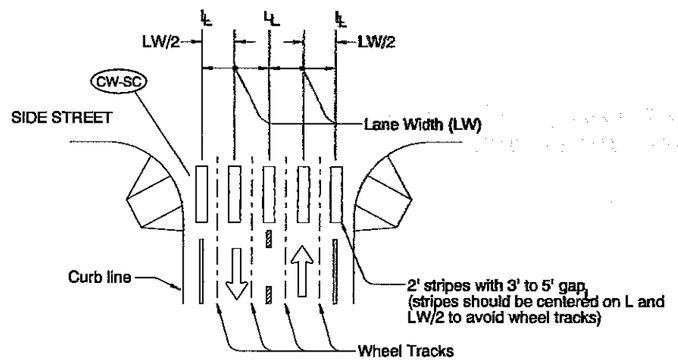


INSTALLATION OF BIKE LANE STENCILS FOR BIKE LANE SEPARATED BY RIGHT TURN LANE

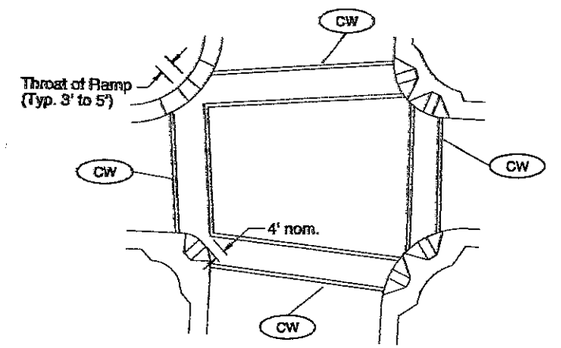


General Note:
Install bike lane stencil to avoid right turning vehicle wheel tracks.

INSTALLATION OF BIKE LANE STENCILS FOLLOWING INTERSECTIONS



STAGGERED CONTINENTAL LAYOUT



STANDARD CROSSWALK BARS AT INTERSECTION

General Note:
1. Install crosswalk bars such that the throat of the ADA ramp is entirely within crosswalk markings, or 5' back of extended fog line, edge of pavement, or curb face.

LEGEND
⇦ Direction of Travel
L - Lane line dimensions are shown on the striping plans

To be accompanied by Standard Dwg. Nos. TM500 thru TM503

CALC. BOOK NO. _____ BASELINE REPORT DATE July 1, 2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

INTERSECTION PAVEMENT MARKINGS (CROSSWALK, STOP BAR, & BIKE LANE STENCIL)

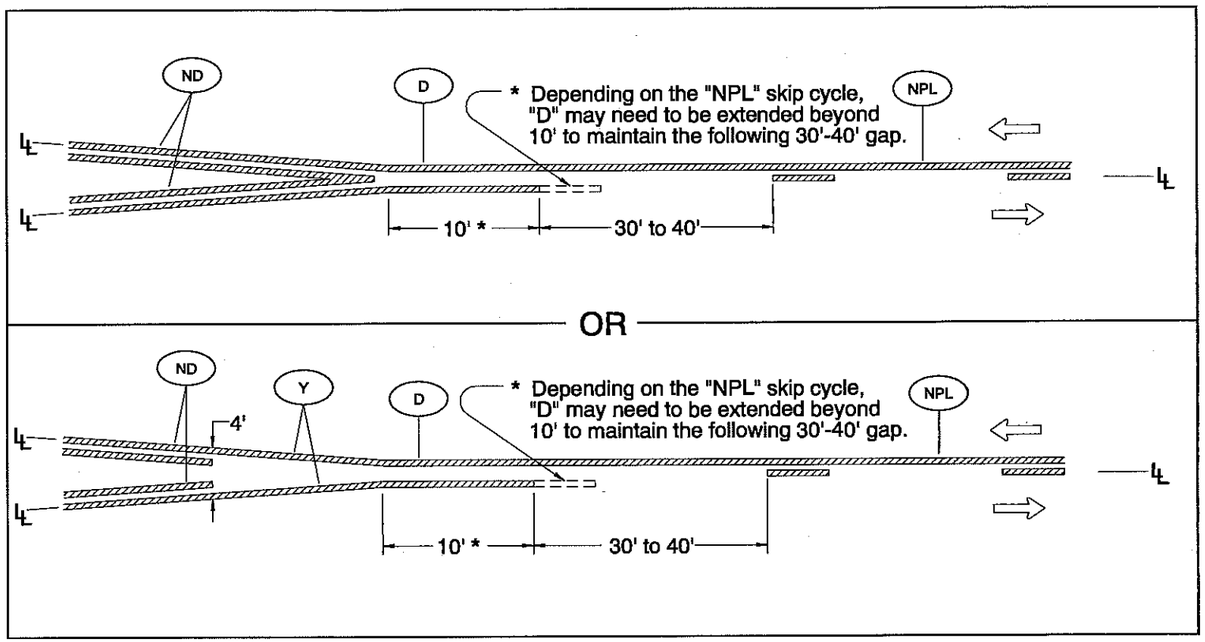
2008

DATE	REVISION DESCRIPTION
7/2010	Edited truck wheel path in Detail B for clarity

TM530.dgn 06-13-2007

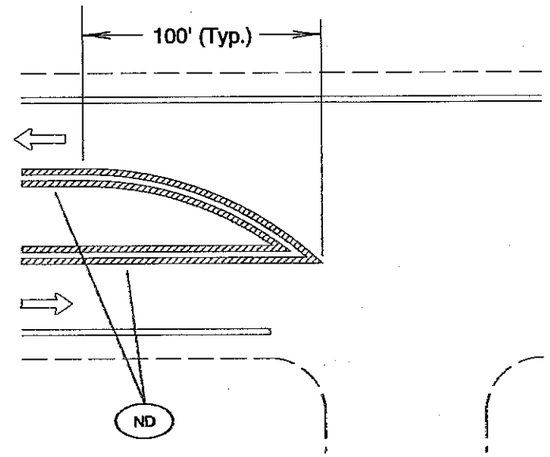
TM530

F:\mgk\Traffic\Standard Drawings\2010_July_Update\plotfile_TM500s.dgn :: Default 7/9/2010 8:38:16 AM hwyr20m



MEDIAN WIDTH TRANSITION

(TWO NARROW DOUBLE YELLOW LINES TO ONE-DIRECTION NO-PASSING LINE)



MEDIAN BULLNOSE DETAIL

TM539.dgn 12-31-2008

TM539

LEGEND

Increasing stationing from left to right

Direction of Travel

To be accompanied by Standard Dwg. Nos. TM500 thru TM503

CALC. BOOK NO. N/A

BASELINE REPORT DATE 12/31/2008

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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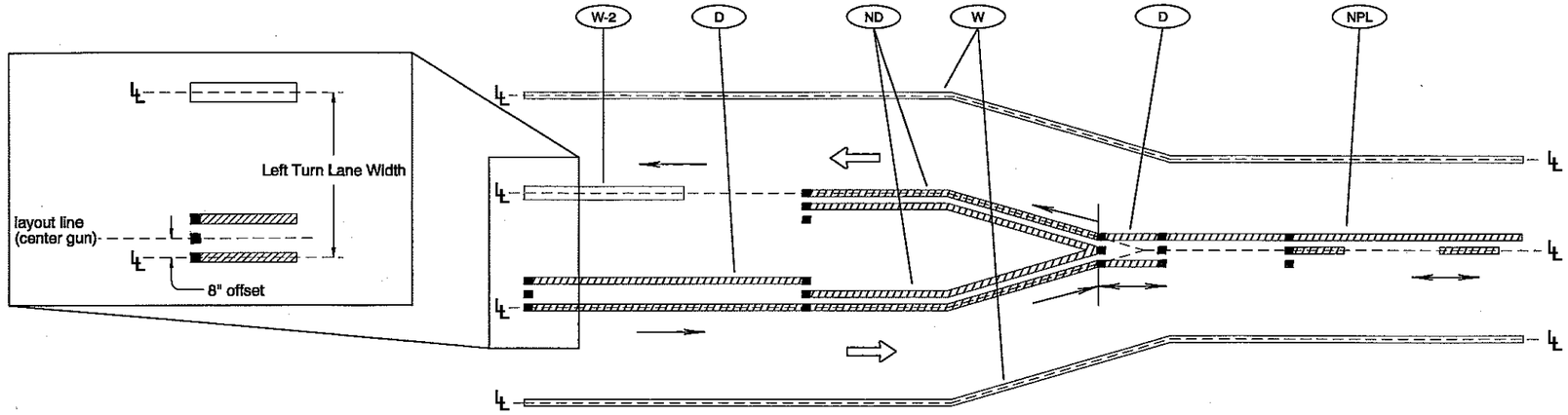
OREGON STANDARD DRAWINGS

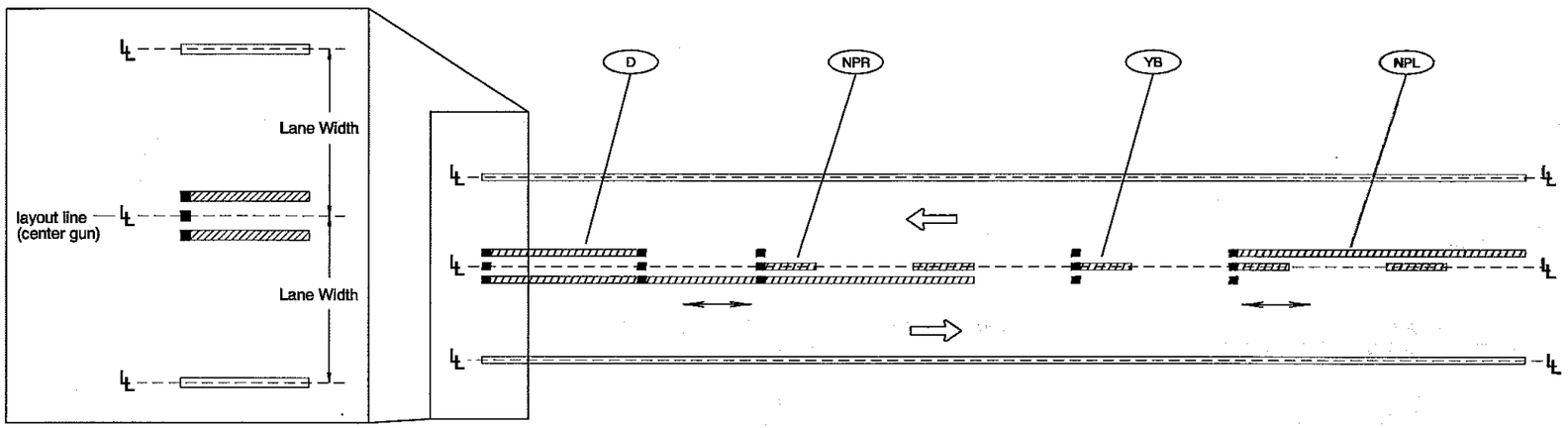
MEDIAN AND LEFT TURN CHANNELIZATION DETAILS

2008

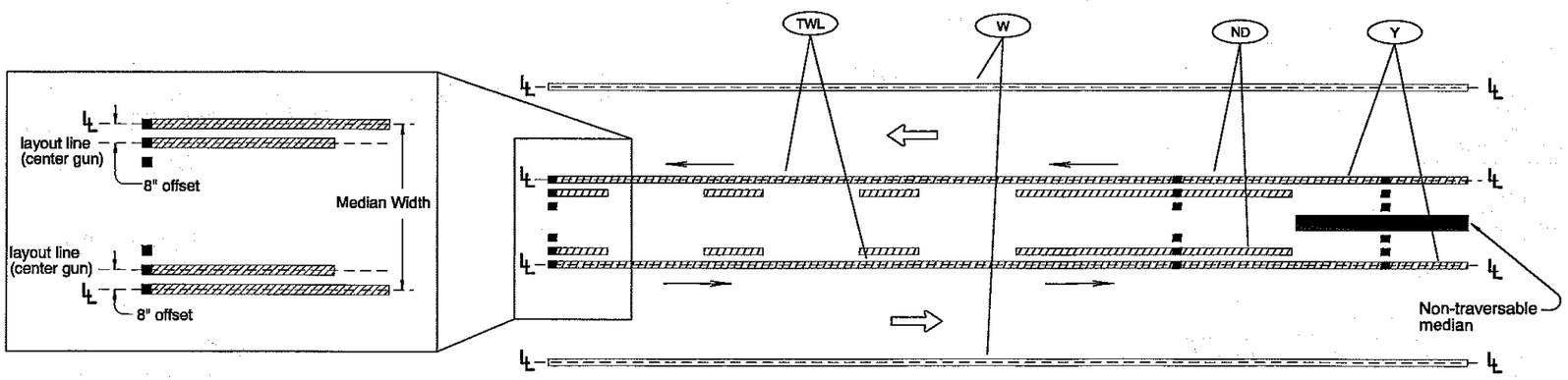
DATE	REVISION DESCRIPTION
1/2009	Modified "median width transition" detail dimensions



LEFT TURN LANE ALIGNMENT LAYOUT



CENTERLINE ALIGNMENT LAYOUT



MEDIAN ALIGNMENT LAYOUT

General note:

1.) Install control points for pavement marking alignment layout along the center gun location.

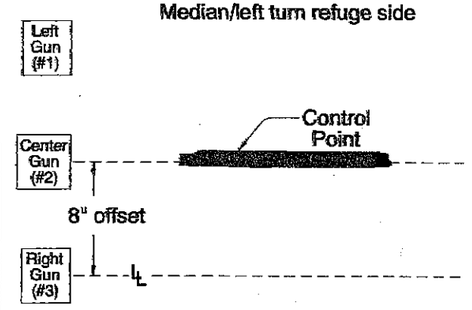
2.) Increasing stationing from left to right

LEGEND

- Direction Of Travel and Thru Traffic Side.
- ℄ — Lane line dimensions are shown on the striping plans.
- Direction of striping truck (may go either direction)
- Direction of striping truck (may go one direction only)
- Three gun installation system (center dot represents center gun)

Line Types requiring control points to be 8" offset from lane line:

- TWL
- ND
- D — For left turn refuges only
- Y — For non-traversable medians on undivided highways only. Right gun (#3) to be used.



8" Offset of Lane Line and Center Gun

To be accompanied by Standard Dwg. Nos. TM500 thru TM503

CALC. BOOK NO. N/A

BASELINE REPORT DATE 12/31/2008

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

ALIGNMENT LAYOUT: LEFT TURN LANE, CENTERLINE & MEDIANS

2008

DATE	REVISION DESCRIPTION
1/2009	New Drawing

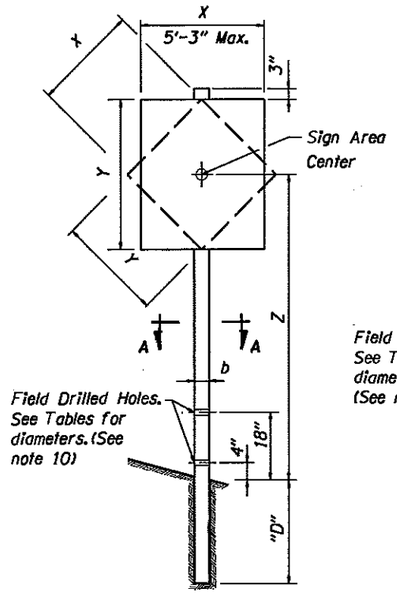
TM561.dgn 12-31-2008

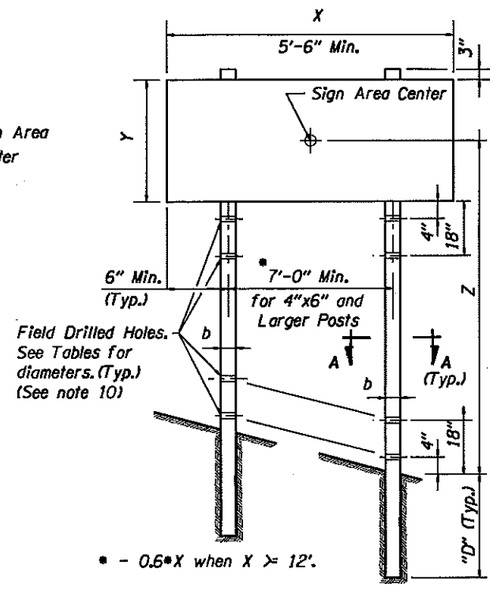
TM561

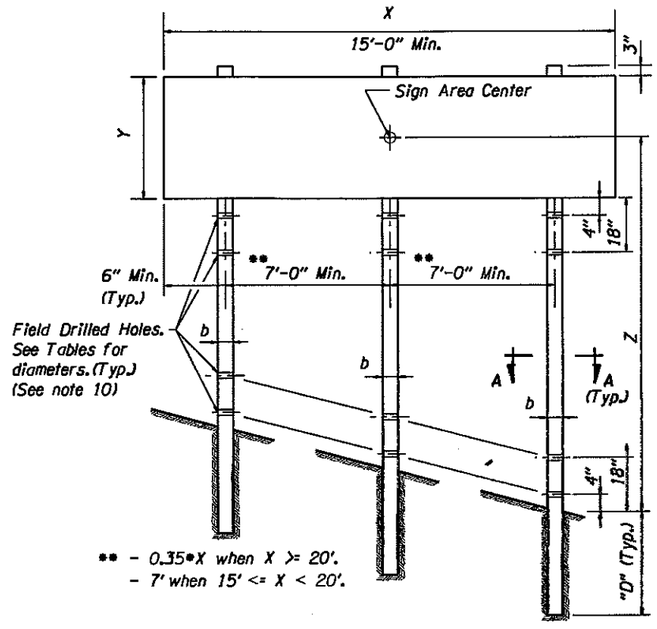
F:\Striping_standard_drawings\std_dwg_revisions\10July\plotfile_TM500s.dgn :: Default 7/7/2010 1:57:47 PM hwyr20s

Effective Date: December 1, 2010 - May 31, 2011

tm670.dgn 08-JAN-2010







ELEVATION

No scale

		(X * Y * Z) in ft³ — 3 Second Gust Wind Speed (TM671) — 85 MPH — Number of Posts				95 MPH — Number of Posts				105 and 110 MPH — Number of Posts				Field Drilled Hole Diameters	Post Embedment Depth "D"
		1	2	3* X=15'	3* X>=20'	1	2	3* X=15'	3* X>=20'	1	2	3* X=15'	3* X>=20'		
POST SIZE b x d	4" x 4"	77	154	165	231	62	124	132	186	56	112	120	168	Not Req'd	4' - 0"
	4" x 6"	162	324	347	486	130	260	278	390	117	234	250	351	1½"	5' - 0"
	6" x 6"	270	540	578	810	216	432	462	648	195	390	417	585	2"	5' - 0"
	6" x 8"	494	988	1058	1482	395	790	846	1185	356	712	762	1068	3"	7' - 0"

PERMANENT WOOD POST TABLE**

* - Linear Interpolate X*Y*Z 3 post values for signs greater than 15' and less than 20'.

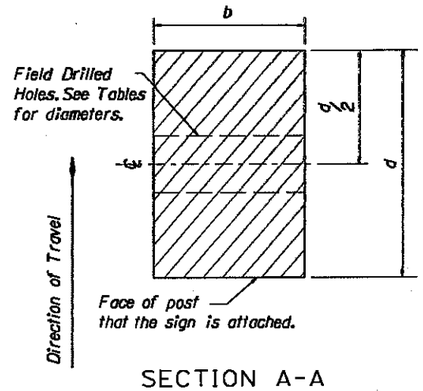
** - See note 8

		(X * Y * Z) in ft³ — 3 Second Gust Wind Speed (TM671) — 85 MPH — Number of Posts				95 MPH — Number of Posts				105 and 110 MPH — Number of Posts				Field Drilled Hole Diameters	Post Embedment Depth "D"
		1	2	3* X=15'	3* X>=20'	1	2	3* X=15'	3* X>=20'	1	2	3* X=15'	3* X>=20'		
POST SIZE b x d	4" x 4"	122	244	261	366	98	196	210	294	88	176	188	264	Not Req'd	4' - 0"
	4" x 6"	257	514	550	771	205	410	439	615	185	370	396	555	1½"	5' - 0"
	6" x 6"	426	852	912	1278	341	682	730	1023	308	616	660	924	2"	5' - 0"
	6" x 8"	779	1558	1669	2337	624	1248	1337	1872	563	1126	1206	1689	3"	7' - 0"

TEMPORARY WOOD POST TABLE**

* - Linear Interpolate X*Y*Z 3 post values for signs greater than 15' and less than 20'.

** - See note 9



SECTION A-A

No scale

General Notes:

1. Wood posts are available in the following commercial lengths: 12', 14', 16', 18', 20', 22', 24', 26'.
2. Material shall be Douglas Fir No. 1 and according to Section 02110.40.
3. For horizontal and vertical clearances of permanent signs refer to TM200 and of temporary signs refer to TM821.
4. Wood post design in accordance with the 5th Edition 2009 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.
5. Use the 3 second gust wind speeds shown on TM671 for the site specific sign location.
6. General design parameters are Kz = 0.87, SIF (duration factor) = 1.6, Cd (sign) = 1.20, and G = 1.14.
7. The sign width to sign height or sign height to sign width ratio shall not exceed 5.0.
8. Permanent signing uses an Ir = 0.71 for a recurrence interval of 10 years.
9. Temporary signing uses an Ir = 0.45 for a recurrence interval of 1.5 years.
10. Posts protected by barrier or guardrail do not require field drilled holes.
11. 4" x 4" posts should not be used in snow plow areas.

Post Embedment Installation:

1. Excavate the hole at least 12" larger in diameter than the diagonal dimension of the post. Maintain at least 6" of space around the edges of the post to accomodate compaction equipment.
2. Align the post in the hole to a vertical position.
3. The space around the wood post shall be backfilled to finished ground surface.
4. Backfill with selected general backfill meeting the requirements of 00330.13.
5. Place in layers not greater than 6 inches.
6. Solidly ram and tamp the layers into the excavation area around the post.
7. Dampen during placement if too dry to compact properly.
8. Replace and finish the surface around the post to match the surrounding surface.

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
5850	08-JAN-2010	TM200, TM671, TM821	1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

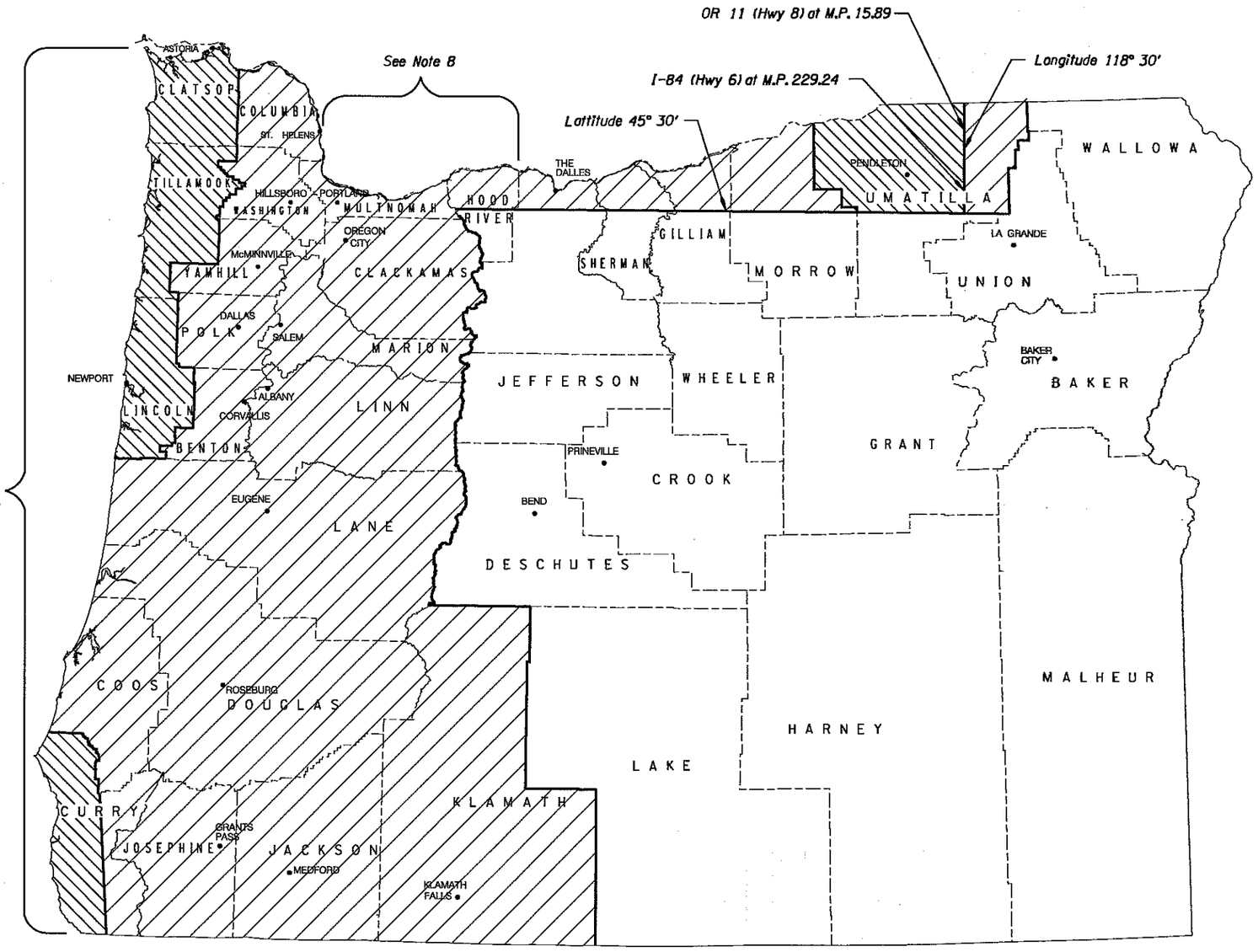
OREGON STANDARD DRAWINGS

WOOD POST SIGN SUPPORTS

2008

DATE	REVISION DESCRIPTION
01/09	Revised 100 mph and 110 mph X*Y*Z values.
01/10	Updated all X*Y*Z values for Douglas Fir No. 1 material, changed 6" x 8" D from 5' to 7', and added 3 post X*Y*Z values for signs greater than 15' and less than 20'.

TM670



NOTES:

1. The wind velocity map as shown is adapted from AASHTO 2001 4th Edition – "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", Appendix C, Figure C-3 and Section 3, Figure 3-2. It uses the wind speed map shown in Figure 1609 of the 2007 Oregan Structural Code to account for locations in the State with special wind regions.
2. The wind velocities shown above are 3-Second Gust wind velocities.
3. The Exposure Catagory is C.
4. The mean recurrence interval is 50-Years.
5. Mountanious terrain, gorges, and ocean promontories are classified as special wind regions and shall be examined for unusual wind conditions.
6. The Interval Height (Kz) is 30 ft.
7. All areas with full exposure to ocean winds shall be designated 110 mph areas.
8. Areas in Multnomah and Hood River counties with full exposuer to Columbia River Gorge winds shall be designated 110 mph areas.
9. Localities may have adopted wind speed higher that shown on this map. Those higher wind speed shall be used.

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET 1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

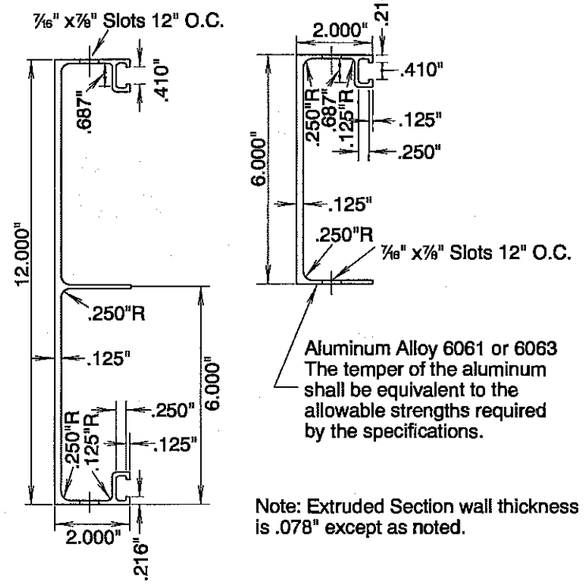
3 SECOND GUST WIND SPEED ISOTACH

2008

DATE	REVISION DESCRIPTION
01/09	Modified map to reflect Oregon Structural Specialty Code modifications.

tm671.dgn 05-JAN-2009

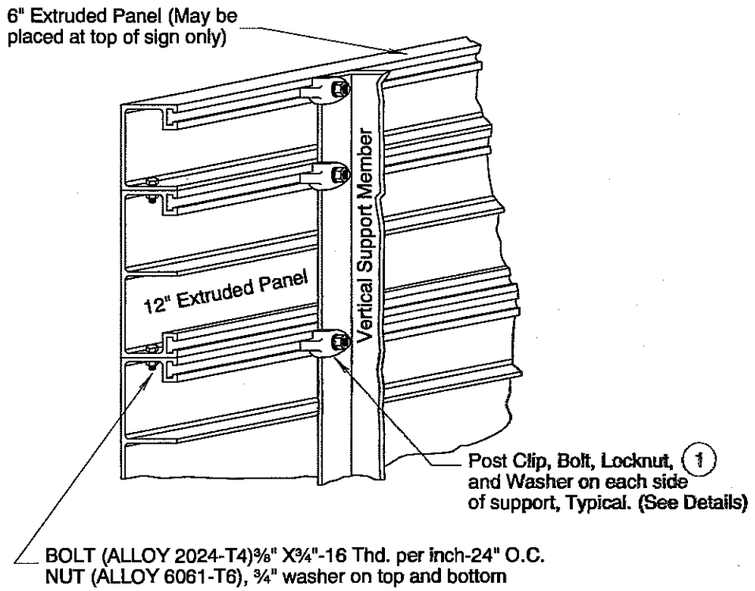
TM671



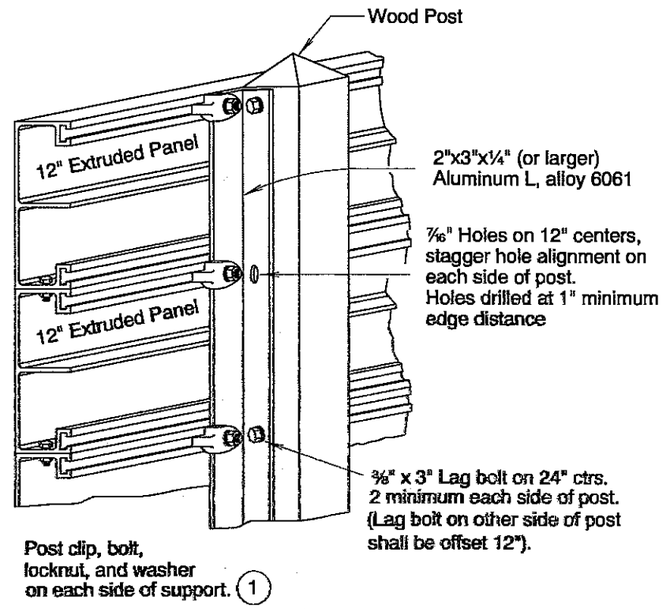
Aluminum Alloy 6061 or 6063
The temper of the aluminum shall be equivalent to the allowable strengths required by the specifications.

Note: Extruded Section wall thickness is .078" except as noted.

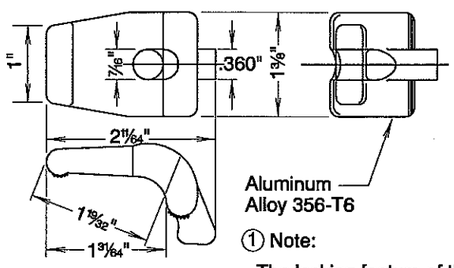
SIGN PANELS & DETAILS



SIGN PANELS ON METAL STRUCTURES
No Scale

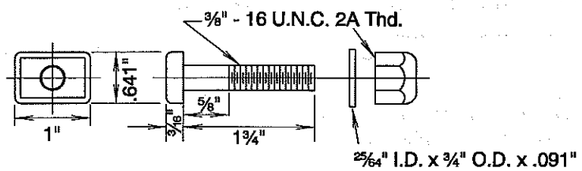


SIGN PANELS ON WOOD POSTS
No Scale



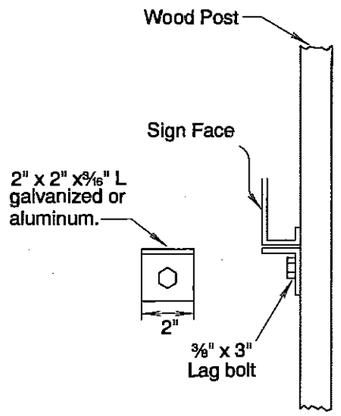
① Note:
The locking feature of the nut shall be a nylon insert.

POST CLIP DETAIL



ALUMINUM ALLOYS; BOLT 2024-T4 ①
LOCKNUT 2017-T4
WASHER (No alloy specified)

POST CLIP BOLT, NUT, & WASHER DETAIL



SIGN SUPPORT BRACKET DETAIL
1 Required per post

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET 1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

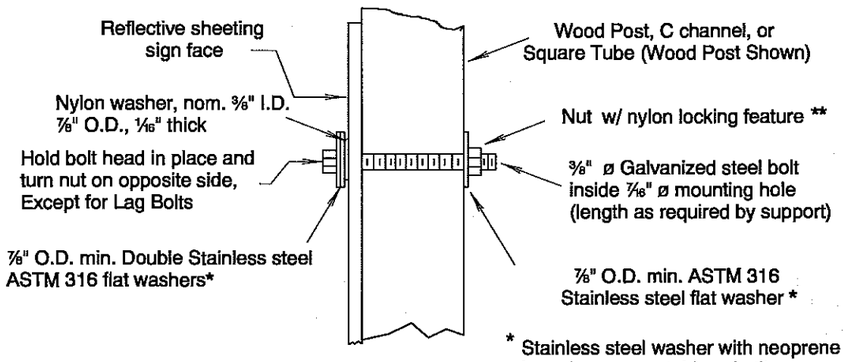
EXTRUDED ALUMINUM PANELS

2008

DATE	REVISION DESCRIPTION

tm675.dgn 05-JAN-2009

TM675



* Stainless steel washer with neoprene layer is an acceptable substitue

** Acceptable substitute for nylon locking nuts:
ANCO PIN-LOC®
TRI-LOC® Top Lock Locknut

Note:
1)When signs are placed on opposing sides of post, ⅜" x 3" lag bolts can be used instead of through bolt.
2) Use nylon and stainless steel washers when signs are placed on both sides of post.
3) Burr threads at junction with nut when locknuts are not used.
4) Post bolts to extend beyond the tightened nuts within the limits of ¼" to 1".

SIGN ATTACHMENT DETAIL

tm676.dgn 05-JAN-2009

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET 1 OF 1

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

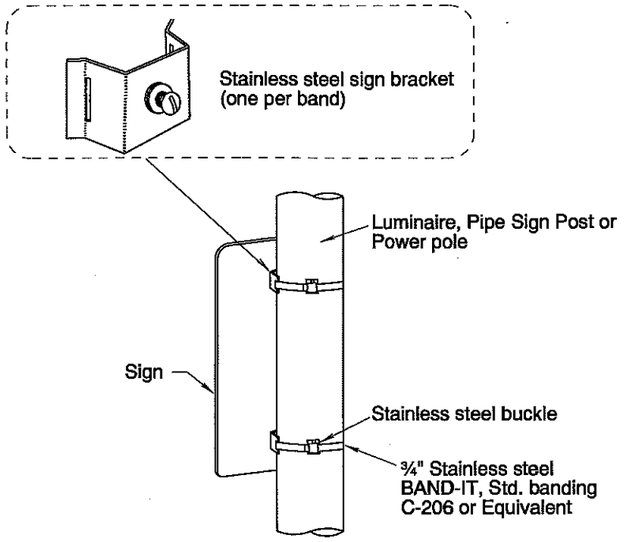
SIGN ATTACHMENTS

2008

DATE	REVISION DESCRIPTION

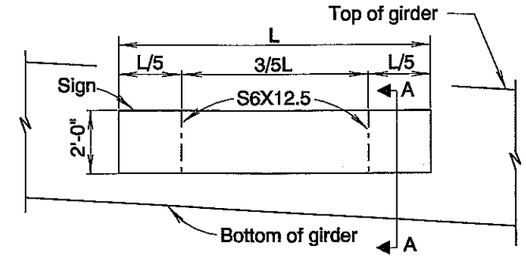
TM676

tm677.dgn 05-JAN-2009

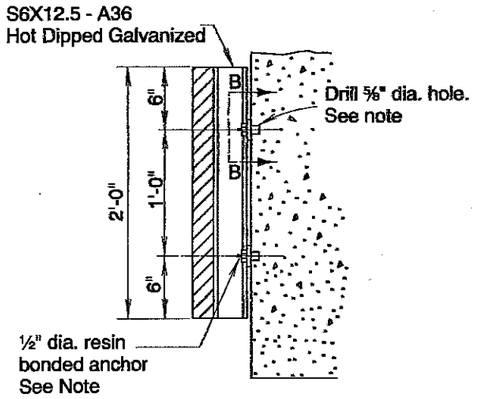


Signs mounted to vertical posts that use stainless steel clamps shall not be wider than 36". Use 2 clamps for all signs less than 48" in height and 3 clamps for signs 48" to 60" in height.

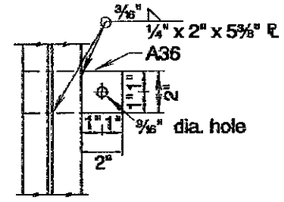
STAINLESS STEEL CLAMP (SSC) DETAIL



SIGN ELEVATION



SECTION A-A



SECTION B-B

Note: Resin bonded anchors shall conform to ASTM specification A307. The resin bonding shall develop a min. pullout strength of 20,000 lbs. for ¾" diameter anchors and 14,000 lbs. for ⅝" diameter anchors.

The hole depths shall be required to develop the specified pullout strength but not less than 5" for ⅝" anchors and 5½" for ¾" diameter anchors.

ROAD NAME SIGN STRUCTURE MOUNT DETAIL

GENERAL NOTES

1) For Secondary Sign Mounts See TM678

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET 1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

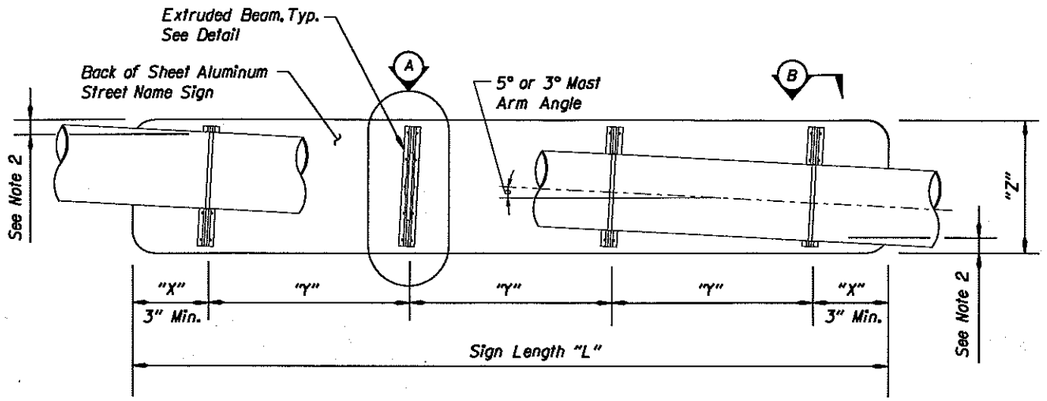
OREGON STANDARD DRAWINGS

SIGN MOUNTS

2008

DATE	REVISION DESCRIPTION
01/09	Removed street name sign reference in stainless steel clamp detail.

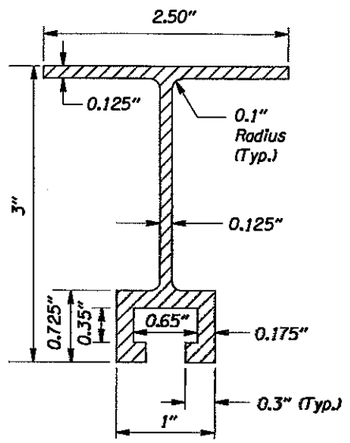
TM677



Mast Arm Street Name Mount Requirements				
Sign Length "L"	Maximum Sign Height "Z"	Maximum Edge Distance "X"	Maximum Support Spacing "Y"	Number of Extruded Beam Locations
"L" Less than or Equal to 4'-0"	30"	"L"/4	"L"/2	2
"L" Greater than > 4'-0" and "L" less than or Equal to 8'-0"	30"	1'-0"	3'-0"	3
"L" Greater than > 8'-0" and "L" less than or Equal to 10'-0"	21"	1'-0"	2'-8"	4
"L" Greater than > 10'-0" and "L" less than or Equal to 12'-0"	21"	1'-0"	2'-6"	5

MAST ARM STREET NAME SIGN MOUNT

No Scale

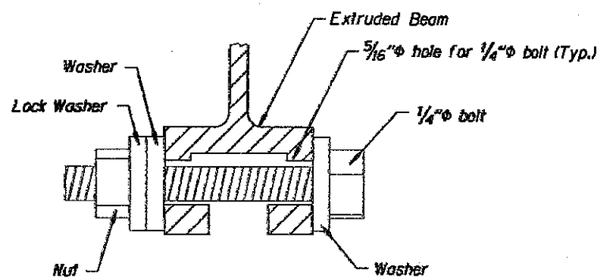


EXTRUDED BEAM DETAIL

No Scale

GENERAL NOTES:

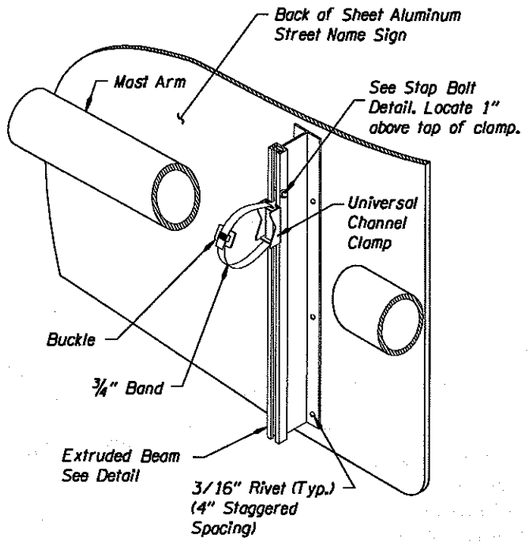
1. Physical fit of the sign must be verified. The edges of the street name sign shall not be within 6" of other signs or the mast arm connection flanges.
2. Equal spaces top and bottom.
3. The top of the street name sign shall be leveled.
4. Extruded Beams are to be set at an angle perpendicular to the mast arm.
5. Material for extruded beam shall be ASTM B 221 6061-T6 Aluminum.
6. Material for ¾" Band shall be ¾" wide, 0.03" thick, and ASTM A 666, Type 201 Stainless Steel.
7. Material for the Sign Bracket, Universal Channel Clamp, and buckle shall be ASTM A 666, Type 201 Stainless Steel.
8. Existing signal poles must be analyzed to verify that the pole and foundation can support the new street name sign loading. See TM650 for allowable street name sizes on new installations.



1. All hardware to be Type 316 Stainless Steel.
2. Locate 1" above the top of the Universal Channel Clamp.

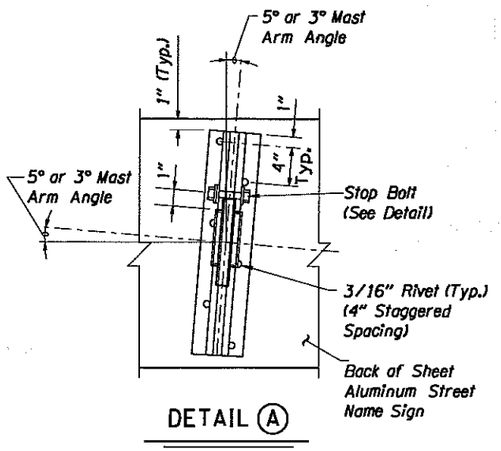
STOP BOLT DETAIL

No Scale



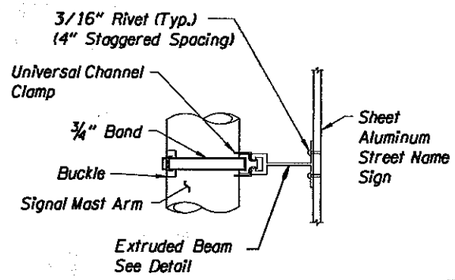
TYPICAL MAST ARM INSTALLATION

No Scale



DETAIL (A)

No Scale



DETAIL VIEW (B)

No Scale

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
			1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

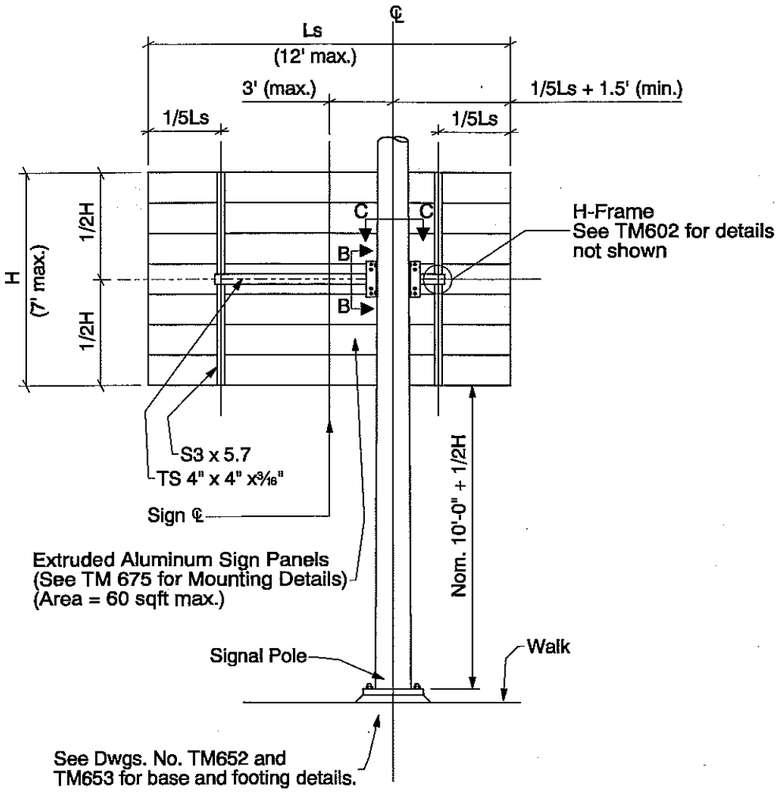
SIGNAL MAST ARM STREET NAME SIGN MOUNTS

2008

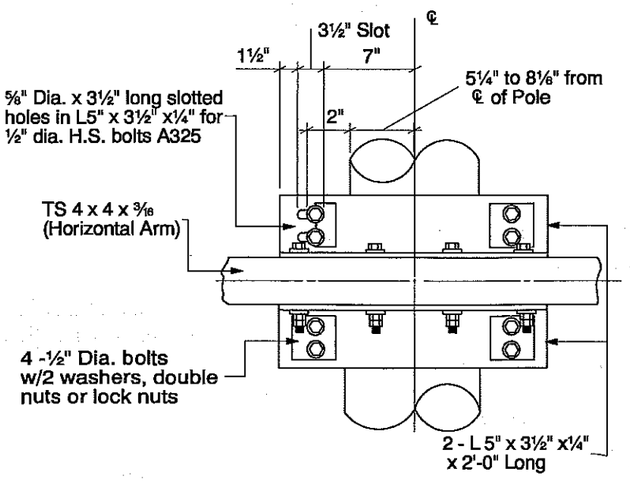
DATE	REVISION DESCRIPTION

tm679.dgn 05-JAN-2009

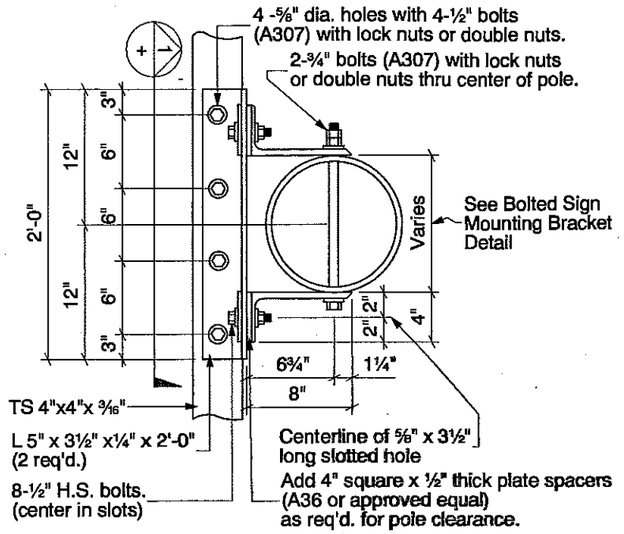
TM679



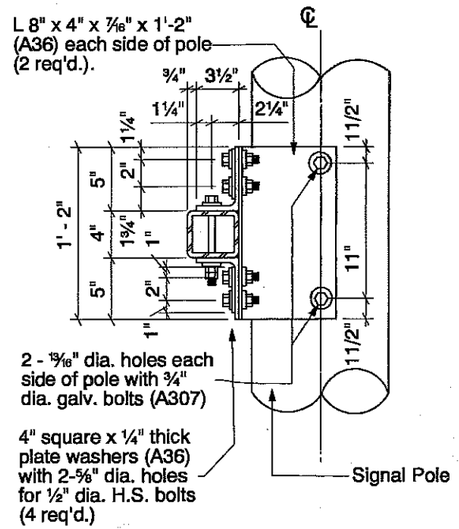
SIGNAL POLE MOUNT
Scale: None



1 + BOLTED SIGN MOUNTING BRACKET DETAIL
Scale: None (Front View)



SECTION C-C
Scale: None



SECTION B-B
Scale: None

General Notes:
1) High strength bolts shall conform to ASTM specification A325. All other bolts shall conform to ASTM specification A307.
2) Structural steel shall conform to ASTM A36.
3) All steel and bolts shall be hot-dip galvanized after fabrication.
4) Surfaces of holes drilled in poles shall be galvanized according to ASTM A780.
5) Maximum sign size is 60 sqft. for this signal pole mount.
6) Any signal pole intended to support one of these mounts must first be analyzed to determine if the load-bearing capacity is sufficient to support this extra load.
7) Structural tubing shall conform to ASTM specification A500, Grade "B" or A501.
8) Cantilever sign to meet lateral clearance requirements and must be kept entirely within the Right-of-Way.
9) Field check pole diameters at mounting heights and cut upper and lower attachment plates to fit.

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
			1 OF 1

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS

SIGNAL POLE MOUNTS

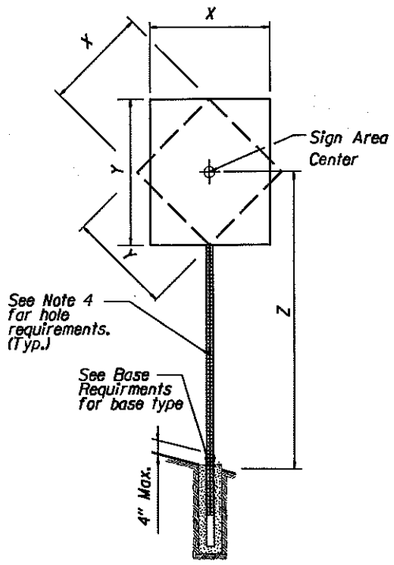
2008

DATE	REVISION DESCRIPTION
01/09	Changed "merchant quality" to "approved equal".

tm680.dgn 05-JAN-2009

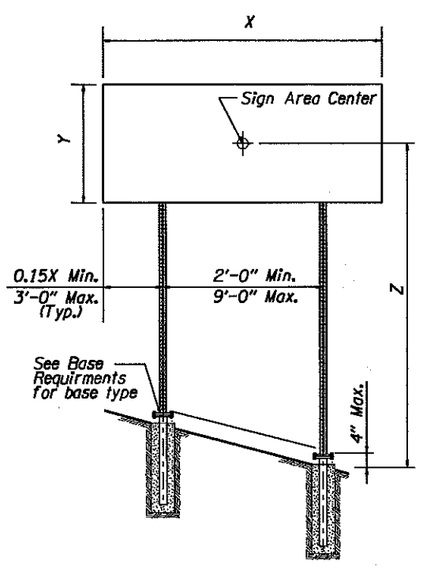
TM680

tm681.dgn 05-JAN-2009



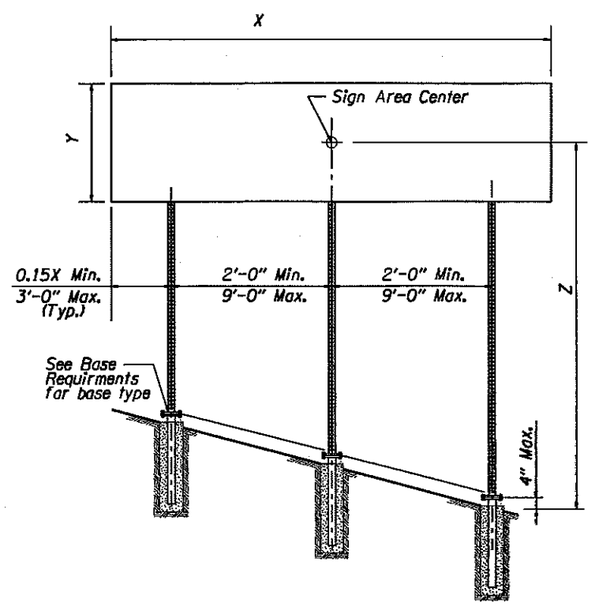
SINGLE POST ELEVATION

No scale



TWO POST ELEVATION

No scale



THREE POST ELEVATION

No scale

General Notes:

1. Perforated Steel Square Supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 4th Edition, 2001, 2002, 2003, and 2006 interim revisions.
2. The design basic wind speed (3 second gust) shall be according to the wind map shown on TM671.
3. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
4. Use $\frac{7}{16}$" diameter holes at 1" spacing on each of the 4 sides.
5. Steel post shall have a minimum yield stress of 50 ksi.
6. Steel shall be galvanized according to ASTM A653 with coating designation G140.
7. General design parameters are Kz = 0.87, Cd (sign) = 1.20, and G = 1.14.
8. Permanent signing uses an Ir = 0.71 for a recurrence interval of 10 years.
9. Temporary signing uses an Ir = 0.45 for a recurrence interval of 1.5 years.
10. The sign width to sign height or sign height to sign width ratio shall not exceed 5.0.
11. For horizontal and vertical clearances of permanent signs refer to TM200 and of temporary signs refer to TM775.
12. Posts protected by barrier or guardrail do not require slip bases.

	(X • Y • Z) in ft³								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
Square Tube Size	1	2	3	1	2	3	1	2	3
2"-12 ga.	79	158	237	63	126	189	57	114	171
2½"-12 ga.	136	272	408	109	218	327	98	196	294
2½"-10 ga.	165	330	495	132	264	396	119	238	357
2¼" & 2½"-12 ga.*	231	462	693	185	370	555	167	334	501

PERMANENT PERFORATED STEEL SQUARE TUBE TABLE

	(X • Y • Z) in ft³								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
Square Tube Size	1	2	3	1	2	3	1	2	3
2"-12 ga.	125	250	375	100	200	300	90	180	270
2½"-12 ga.	215	430	645	172	344	516	155	310	465
2½"-10 ga.	261	522	783	209	418	627	189	378	567
2¼" & 2½"-12 ga.*	364	728	1092	292	584	876	263	526	789

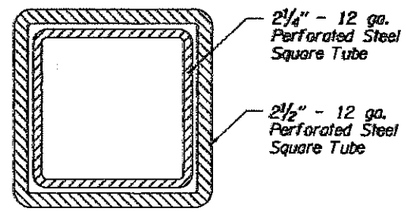
TEMPORARY PERFORATED STEEL SQUARE TUBE TABLE

* - See 2¼" & 2½" - 12 ga. detail.

	Number of Posts		
Square Tube Size	1	2	3
2"-12 ga.	Anchor	Anchor	N/A
2½"-12 ga.	Anchor	Slip	Slip
2½"-10 ga.	Slip	Slip	Slip
2¼" & 2½"-12 ga.*	Slip	Slip	Slip

1. Anchor - See Drawing TM687 for PSST anchor foundation details.
2. Slip - See Drawing TM688 for PSST slip base foundation details.
3. N/A - Do not use this option.

BASE REQUIREMENTS



2¼" - 12 ga. PSST to extend entire length inside of the 2½" - 12 ga. PSST.

2¼" & 2½" - 12 GA. DETAIL

No scale

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
5752		TM200, TM671, TM687, TM688, TM775	1 OF 3

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

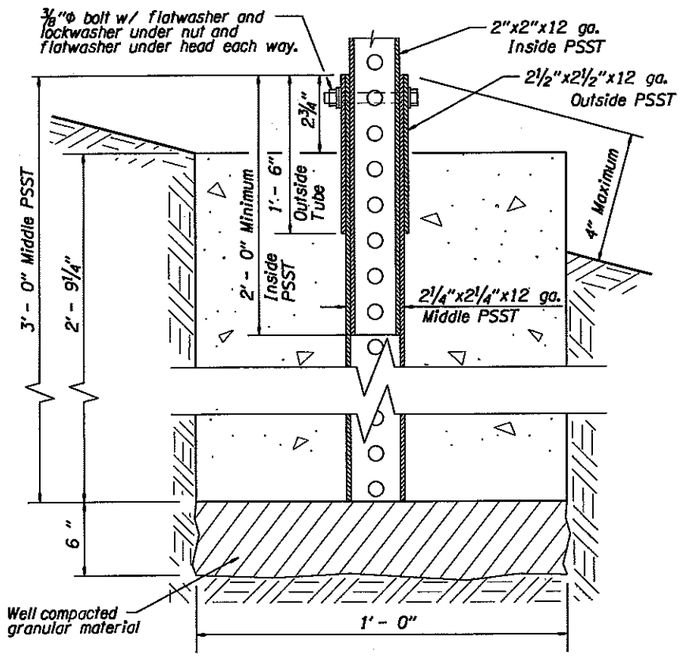
PERFORATED STEEL SQUARE TUBE (PSST) SIGN SUPPORT INSTALLATION

2008

DATE	REVISION DESCRIPTION
01/09	Added multiple posts, slip bases, and X*Y*Z values.

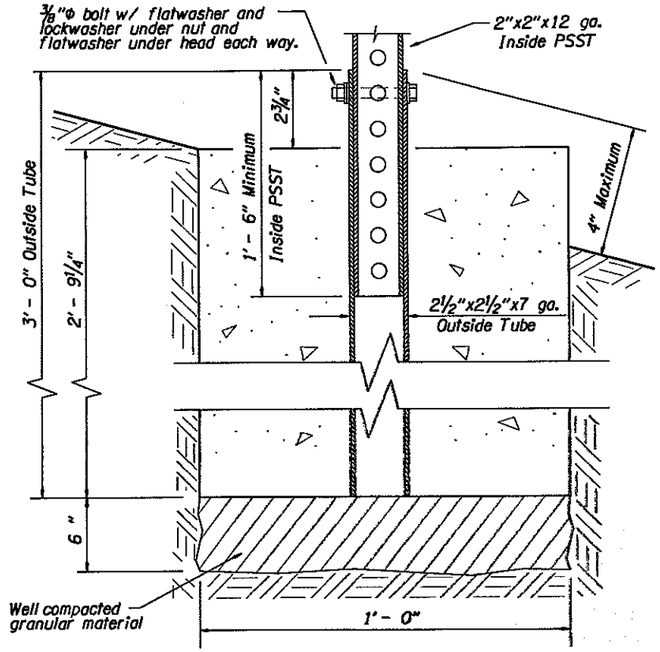
TM681

tm687.dgn 05-JAN-2009



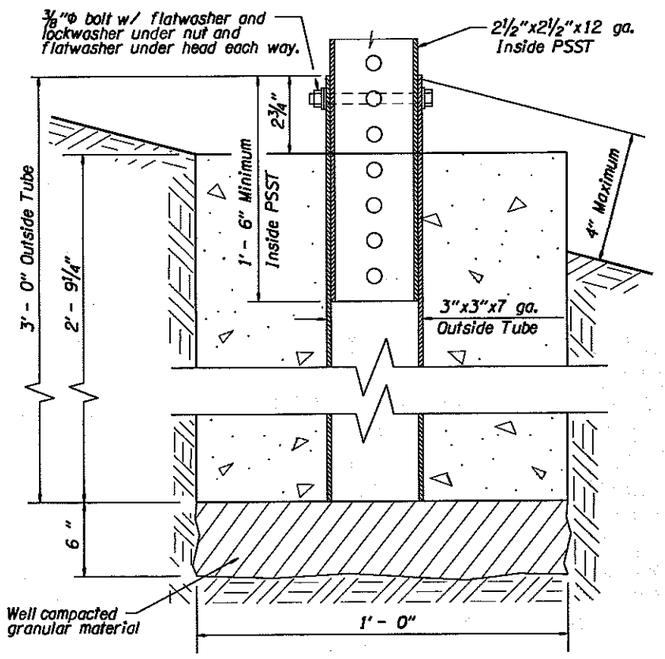
2" ANCHOR DETAIL

No scale



2" OPTIONAL ANCHOR DETAIL

No scale

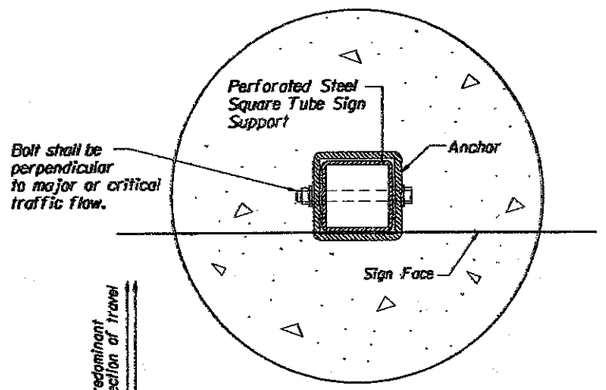


2½" ANCHOR DETAIL

No scale

General Notes:

1. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
2. Anchor steel shall be hot dipped galvanized or approved equal.
3. Footing concrete shall be Commercial Grade Concrete (fc = 3000 psi) per Specification 00440. The CGC mixture may be accepted at the site of placement according to 00440.14.
4. The estimated concrete volume is .09 cubic yards.



PLAN

No scale

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
5752		TM681, TM688	2 OF 3

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

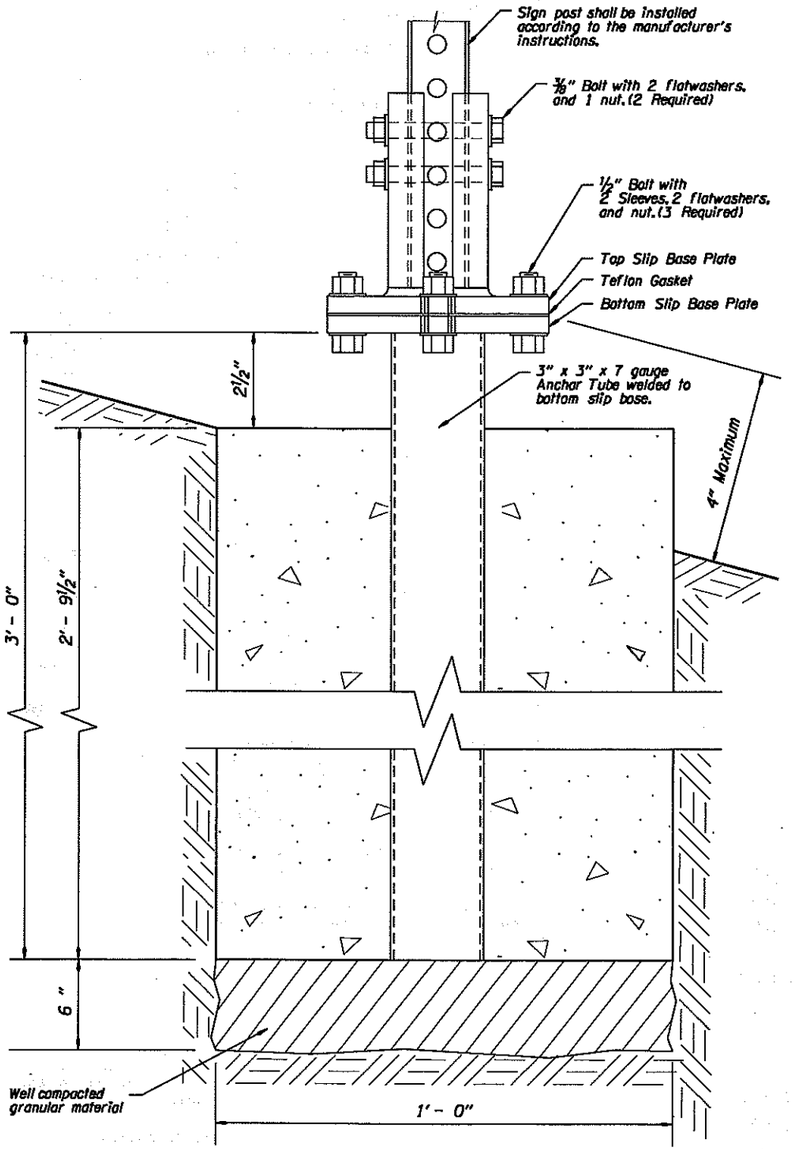
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS
PERFORATED STEEL SQUARE TUBE (PSST) ANCHOR FOUNDATION
2008

DATE	REVISION DESCRIPTION

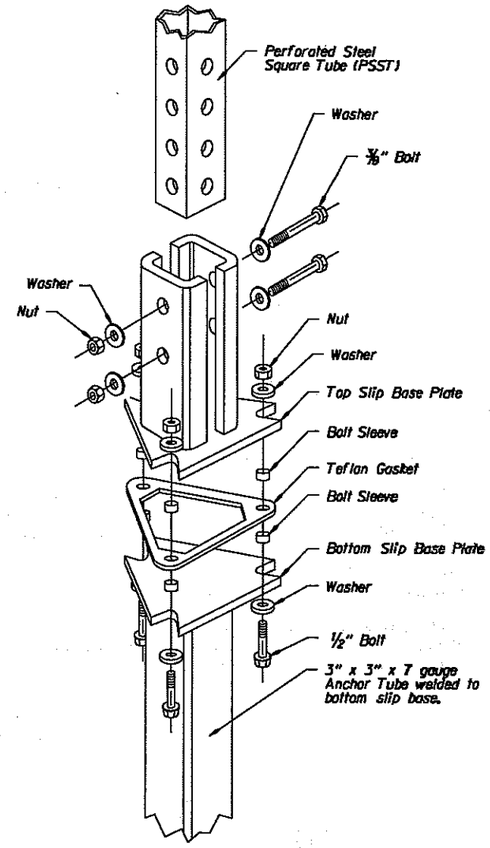
TM687

tm688.dgn 05-JAN-2009



SLIP BASE ELEVATION

No scale

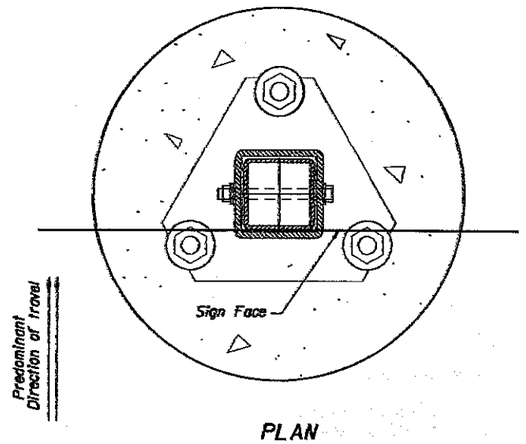


SLIP BASE EXPLODED VIEW

No scale

General Notes:

1. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
2. Slip base steel shall be hot dipped galvanized or approved equal.
3. Footing concrete shall be Commercial Grade Concrete (fc = 3000 psi) per Specification 00440. The CGC mixture may be accepted at the site of placement according to 00440.14.
4. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
5. All slip bases shall be pre-assembled by the manufacturer and shall be installed according to the manufacturer's instructions.
6. Use slip bases listed on the ODOT Qualified products list or submit crash testing data, installation instructions, and unstamped working drawings according to 00150.35.
7. Slip base details shown are not for a specific manufacturer and are only shown to convey general pieces of a slip base system. Specific slip base material will be according to the manufacturer's documentation.



PLAN

No scale

CALC. BOOK NO.	BASELINE REPORT DATE	ACCOMPANIED BY DWGS.	SHEET
5752		TM681, TM687	3 OF 3

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS
PERFORATED STEEL SQUARE TUBE (PSST) SLIP BASE FOUNDATION

2008

DATE	REVISION DESCRIPTION

TM688

★ Use Pre-Construction Posted Speed to Select the Correct Design Speed from the Tables below:

CONCRETE BARRIER FLARE RATE TABLE	
★ SPEED (mph)	FLARE RATE
70	20:1
65	19:1
60	18:1
55	16:1
50	14:1
45	12:1
40	10:1
35	9:1
30	8:1

MINIMUM LENGTHS TABLE					
	TAPER "L" (ft)				BUFFER "B" (ft)
★ Speed (mph)	W = Width being closed. (Lane or Shoulder)				
	W ≤10	W = 12	W = 14	W = 16	
25	105	125	145	165	75
30	150	180	210	240	100
35	205	245	285	325	125
40	265	320	375	430	150
45	450	540	630	720	180
50	500	600	700	800	210
55	550	660	770	880	250
60	600	720	840	960	285
65	650	780	910	1040	325
70	700	840	980	1120	365

NOTE:

- For Lane/Shoulder closure where W < 10' , Use "L" value for W = 10'
- Use 1000 feet for freeway lane closure taper lengths, See Drgs. TM860, TM861, and TM862

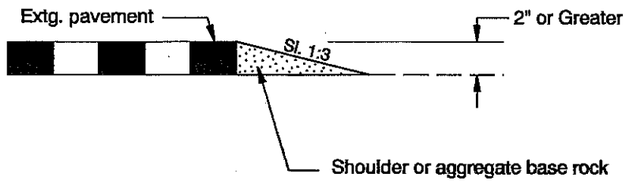
TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE				
★ Speed (mph)	Sign Spacing (ft)			Max. Channelizing Device Spacing (ft)
	A	B	C	
20 - 30	100	100	100	20
35 - 40	350	350	350	20
45 - 55	500	500	500	40
55 - 70 Freeway	1000	1500	2640	40

NOTE:

- For speeds less than 45 mph, place traffic control devices on 10 ft. spacings for intersection radii and around work area(s)
- When necessary, sign spacing may be adjusted to fit site conditions. Limit spacing adjustments to 20% of the "A" dimension for speeds < 45 mph. Limit spacing adjustments to 10% of the "A" dimension for speeds ≥ 45 mph.

NOTES:

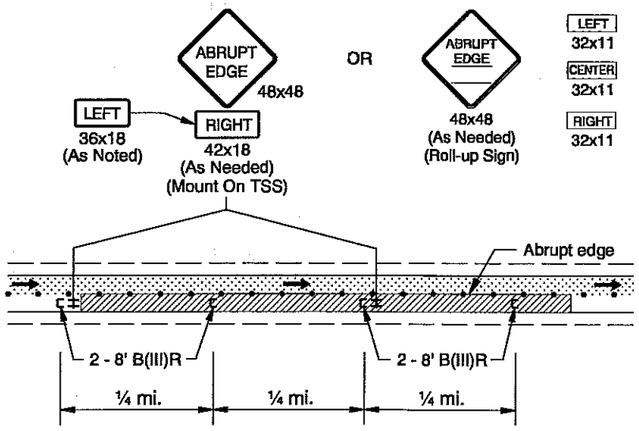
- When paved shoulders adjacent to excavations are less than four feet wide protect abrupt edge as shown.
- Use aggregate wedge when abrupt edge is 2 inches or greater.



EXCAVATION ABRUPT EDGE DETAIL

NOTES:

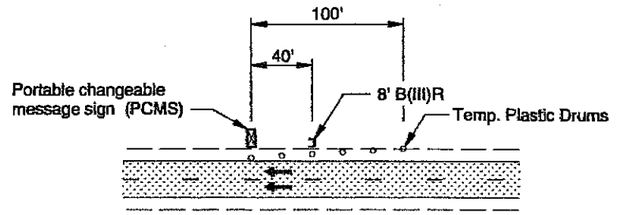
- Abrupt edges may be created by paving, operations, excavations or other roadway work. Use abrupt edge signing for abrupt edges of 1 inch or greater.
- If the excavation is located on left side of traffic, replace the 8' B(III)R barricades with 8' B(III)L barricades and replace the "RIGHT" (CW21-8C-18) riders with "LEFT" (CW21-8A-18) riders.
- Continue signing and other traffic control devices throughout excavation area at spacings shown.
- If roll-up signs are used, attach the correct (CW21-9-11) plaques to the sign face using hook and loop fasteners. Place roll-up signs in advance of barricades.



TYPICAL ABRUPT EDGE SIGNING DETAIL

NOTES:

- Install PCMS beyond the outside shoulder, when possible.
- Use the appropriate type of barricade panels for PCMS location. Right shoulder, use Type B(III)R Left shoulder, use Type B(III)L
- Use six drums in shoulder taper on 20' spacing.
- Detail as shown is also used for Portable Traffic Signal installation.



PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) INSTALLATION DETAIL

GENERAL NOTES FOR ALL TCP DRAWINGS:

- Signs and other Traffic Control Devices (TCD) shown are the minimum required.
- Place Temporary Sign Support (TSS) approx. 10' behind barricade.
- Place Portable Changeable Message Sign (PCMS) approx. 40' behind barricade.
- Place sequential arrow approx. 20' behind barricade for posted speeds less than 45 mph.
- Place sequential arrow approx. 40' behind barricade for posted speeds 45 mph or greater.
- For work duration of greater than 3 days, remove or cover existing pavement markings, as directed.
- Arrows shown in roadway are not pavement legends, but directional arrows to indicate traffic movements.

o o o Temp. Plastic Drums See TCD Spacing Table for max. spacing.

• • • 28" Tubular Markers See TCD Spacing Table for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

CALC. BOOK NO. TM09-01

BASELINE REPORT DATE 01-JAN-2010

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

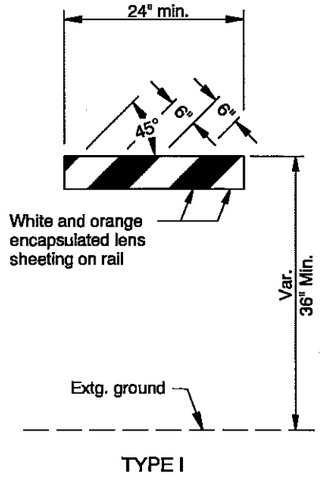
TABLES, ABRUPT EDGE AND PCMS DETAILS

2008

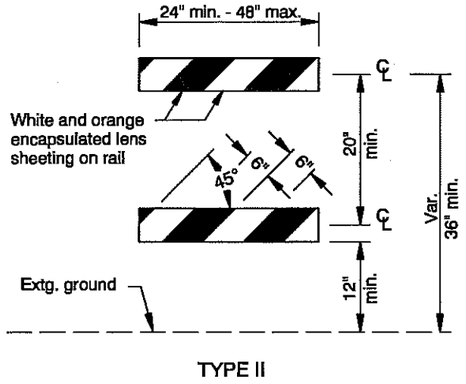
DATE	REVISION DESCRIPTION
01-01-2010	REVISED DRAWING AND NOTES

tm800.dgn 01-JAN-2010

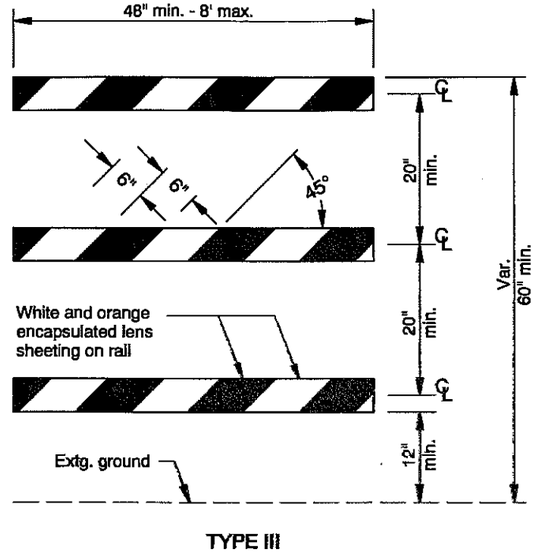
TM800



TYPE I



TYPE II



TYPE III

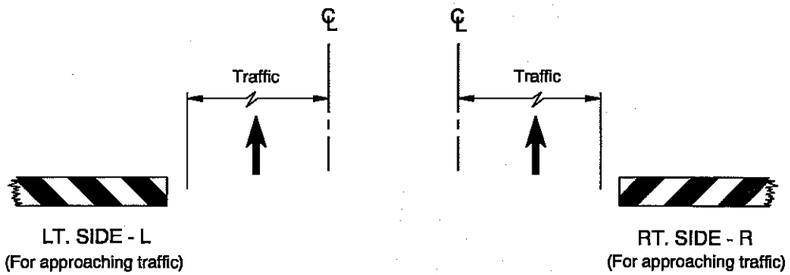
BARRICADE RAIL LAYOUT

GENERAL NOTES FOR ALL DETAILS:

- All non-reflectorized surfaces shall be white.
- Sandbags (approximately 25 lb sack filled with sand) may be placed on lower frame to provide additional ballast.
- For rails less than 36" long, 4" wide stripes shall be used.
- Rails must be 8" min. to 12" max. in height.
- Use barricades from ODOT Qualified Products List (QPL).

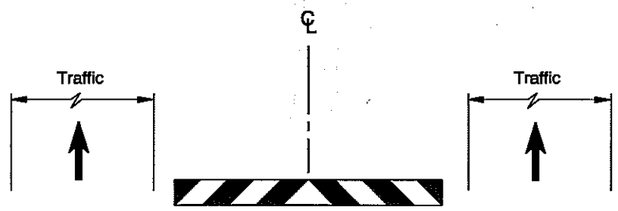
NOTES:

- Markings for barricade rails shall slope downward at an angle of 45° in the direction traffic is to pass.
- Where a barricade extends entirely across a roadway, it is desirable that the stripes slope downward in the direction toward which traffic must turn in detouring.
- Where both right and left turns are provided for, or if used for full roadway closure purposes, the chevron striping may slope downward in both directions from the center of the barricade.



LT. SIDE - L
(For approaching traffic)

RT. SIDE - R
(For approaching traffic)



LT. / RT. - LR
(For approaching traffic)

DIAGRAM FOR BARRICADE PLACEMENT AND SLOPE MARKING

Barricade
Barricade type
Indicates barricade placement on the roadway

B(III)R

BARRICADE NOTATION

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2009

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OREGON STANDARD DRAWINGS

TEMPORARY BARRICADES

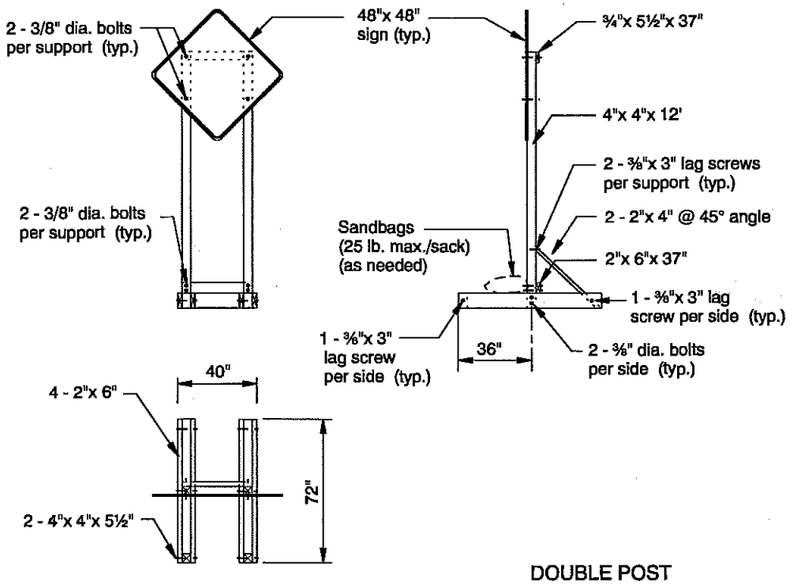
2008

DATE	REVISION DESCRIPTION

tm820.dgn 01-JUL-2009

TM820

tm821.dgn 01-JAN-2010

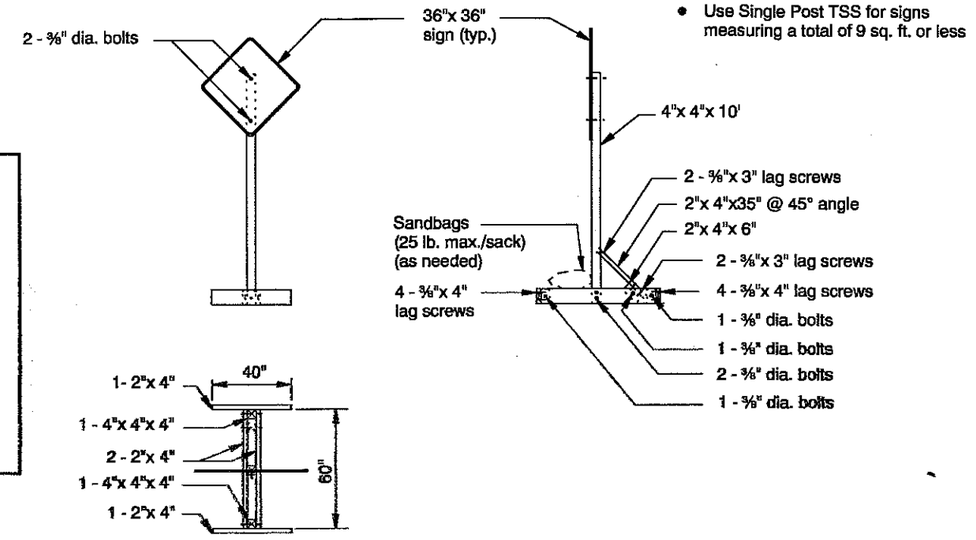


NOTE:

- Use Double Post TSS for signs measuring 40 sq. ft. or less.

- DO NOT TIP OVER TSS.
- Position TSS 10' behind a Type (III) barricade, unless otherwise shown
- When not in use, locate TSS outside the clear zone and turn away from traffic; or, turn or cover sign and retain the Type (III) barricade for delineation.
- Use either Douglas Fir or Hem Fir, which is surfaced four sides (S4S) and free of heart center (FOHC)
- See "Temporary Sign Placement" detail for sign installation heights

DOUBLE POST
TEMPORARY SIGN SUPPORT (TSS)



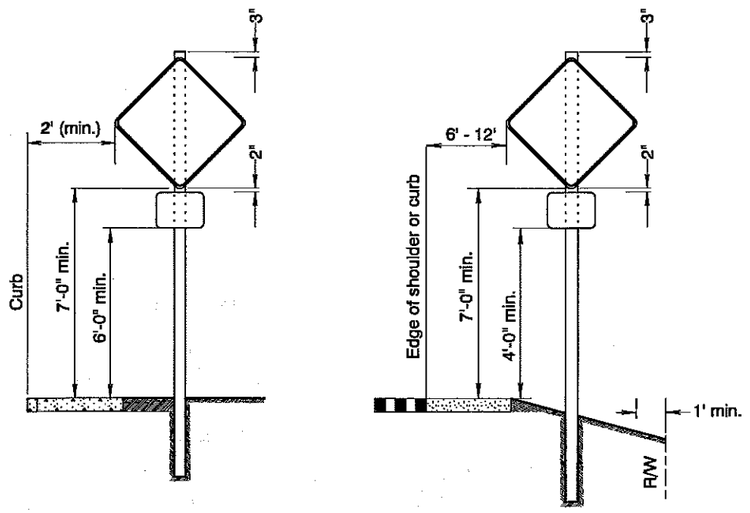
NOTE:

- Use Single Post TSS for signs measuring a total of 9 sq. ft. or less

SINGLE POST
TEMPORARY SIGN SUPPORT (TSS)

NOTE:

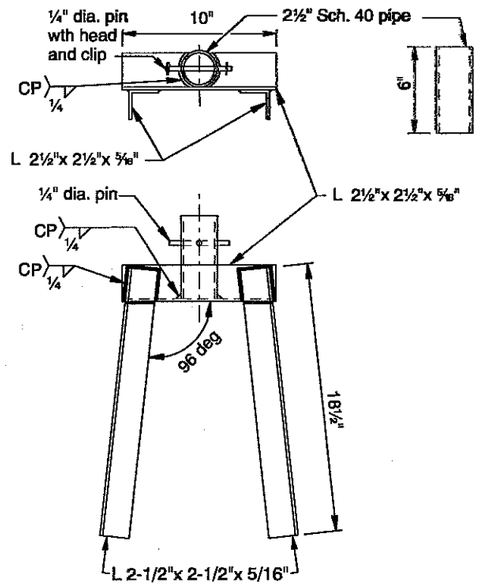
- When TSS or post mounted signs are installed within a sidewalk or bicycle facility, install secondary sign (rider) at a minimum height of 7'-0" from pavement surface to bottom of rider.

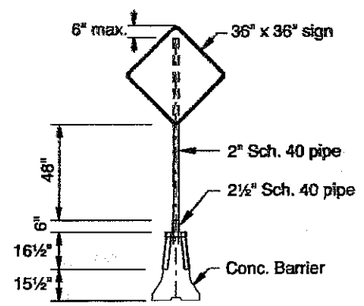


URBAN, CURBED AREAS

RURAL AND UNCURBED AREAS

TEMPORARY SIGN PLACEMENT





NOTES:

- Drill additional holes so sign can be rotated 90 degrees and pinned when not in use.
- All structural steel shall conform to ASTM A36.
- Support fits both 32" and 42" tall "F" barrier.
- Use concrete barrier sign support for signs measuring a total of 9 sq. ft. or less.
- Place support at connection between two concrete barrier sections.
- Do not use clipped signs.

CONCRETE BARRIER SIGN SUPPORT

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2010

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OREGON STANDARD DRAWINGS

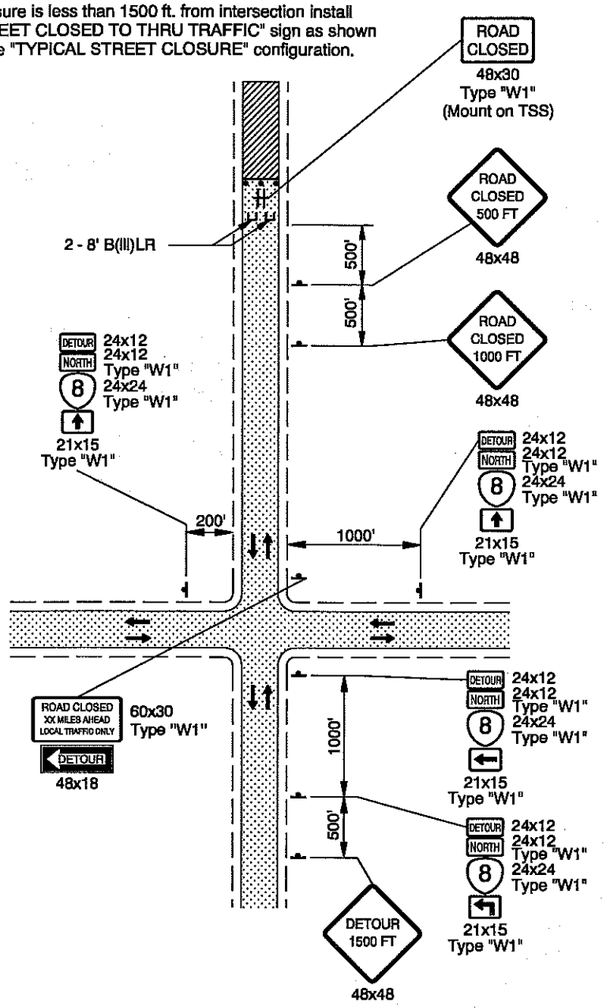
TEMPORARY SIGN SUPPORTS

2008

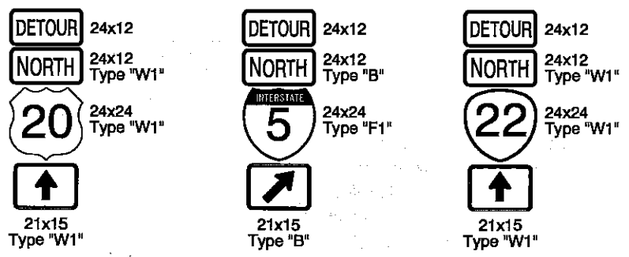
DATE	REVISION DESCRIPTION
07-01-2009	REVISED NOTES
01-01-2010	REVISED NOTES

TM821

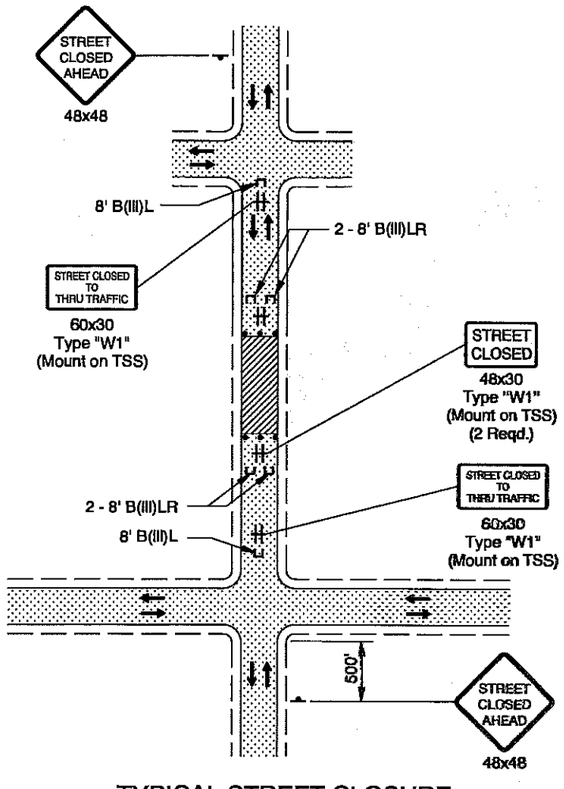
NOTE:
If closure is less than 1500 ft. from intersection install "STREET CLOSED TO THRU TRAFFIC" sign as shown on the "TYPICAL STREET CLOSURE" configuration.



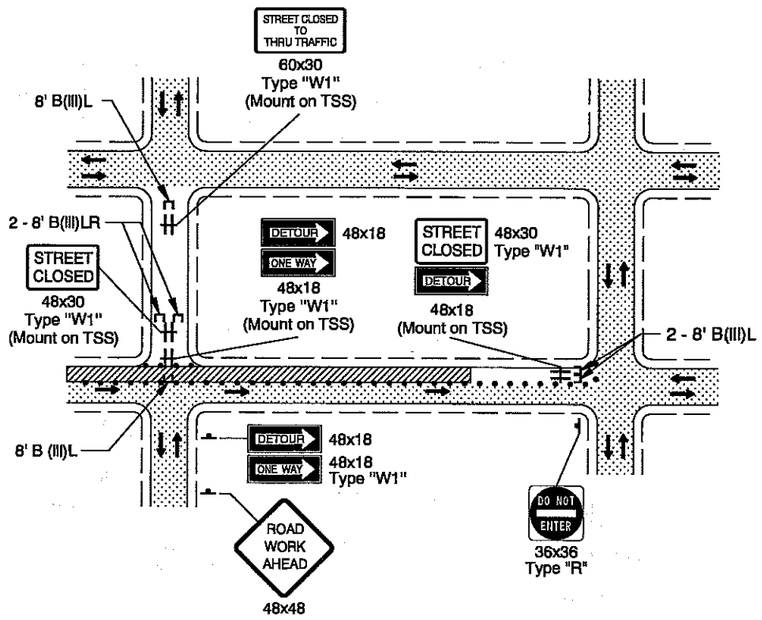
TYPICAL ROAD CLOSURE WITH DETOUR



TYPICAL TRAILBLAZER ASSEMBLY

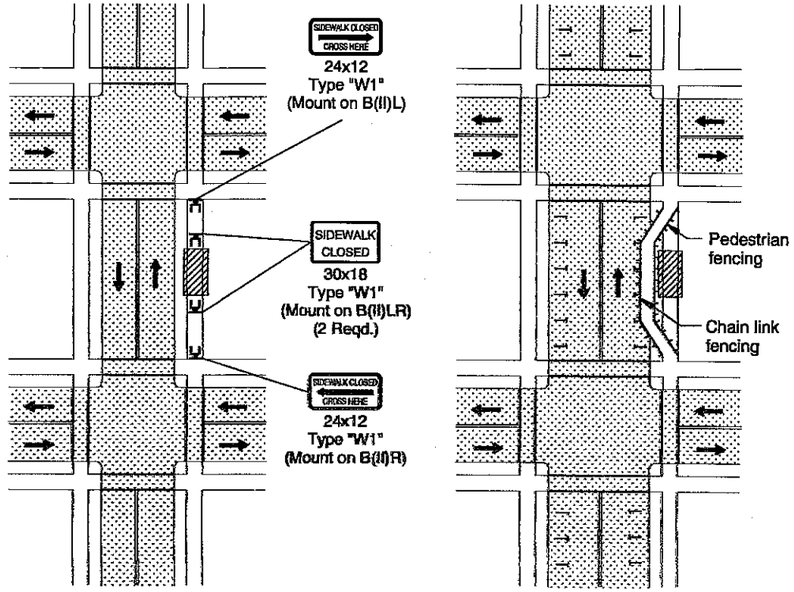


TYPICAL STREET CLOSURE



TYPICAL PARTIAL STREET CLOSURE

NOTE:
Use 6' chain link fencing, pedestrian fencing, or other approved TCD that meets ADA requirements for the visually impaired.



SIDEWALK DETOUR SIDEWALK DIVERSION

TYPICAL SIDEWALK CLOSURES

GENERAL NOTES FOR ALL DETAILS:

- Use a minimum of two barricades (2 - 8' B(III)LR) for a road closure.
- Place additional signing as directed.

..... 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2009

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OREGON STANDARD DRAWINGS

CLOSURE DETAILS

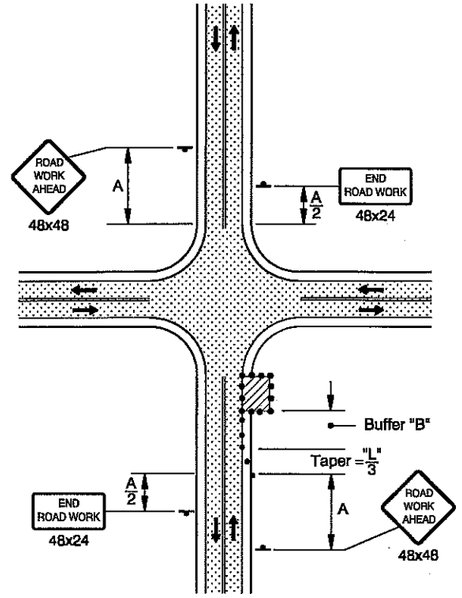
2008

DATE	REVISION DESCRIPTION
07-01-2009	REVISED NOTES

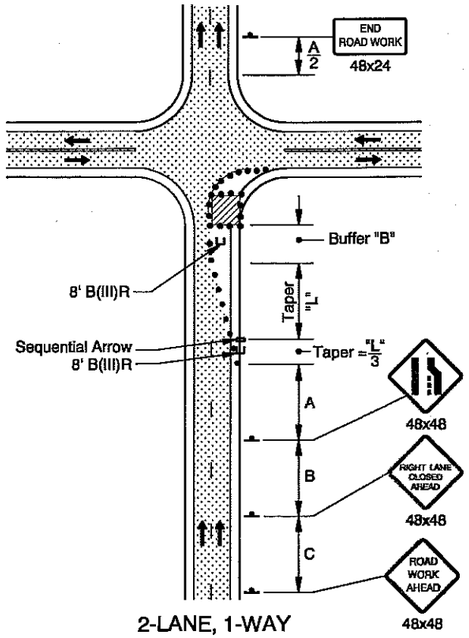
tm840.dgn 01-JUL-2009

TM840

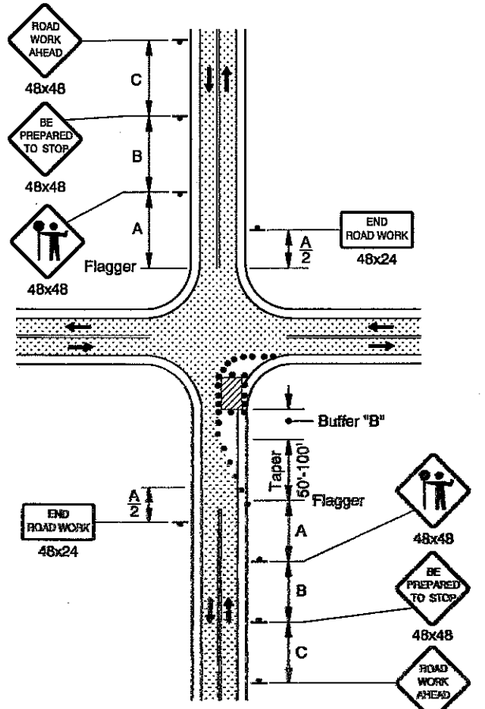
tm841.dgn 01-JUL-2009



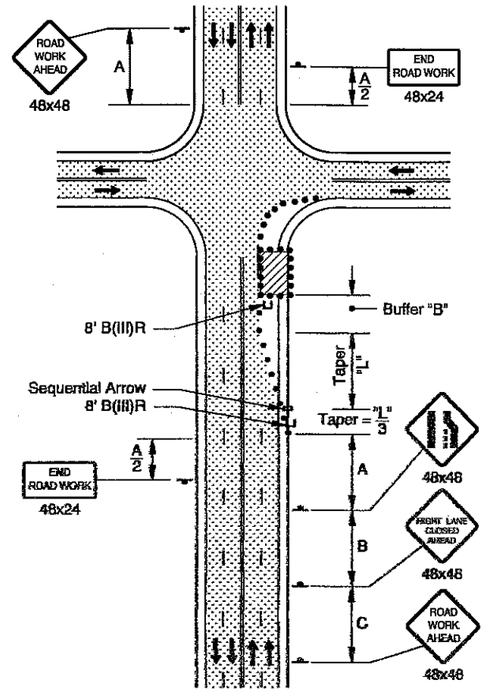
2-LANE, 2-WAY
SHOULDER CLOSURE



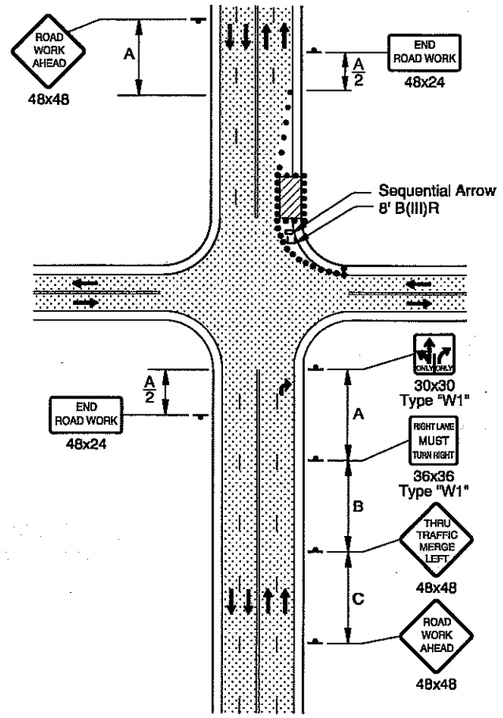
2-LANE, 1-WAY
RIGHT LANE CLOSURE



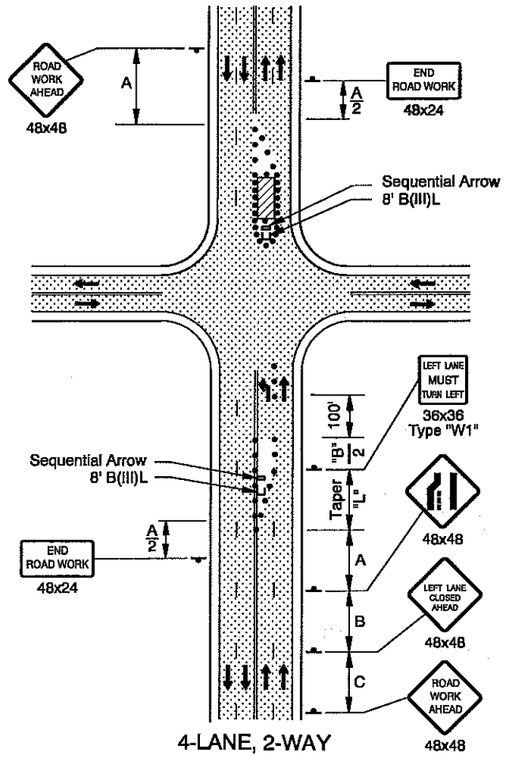
2-LANE, 2-WAY
ONE LANE CLOSURE



4-LANE, 2-WAY
RIGHT LANE CLOSURE, NEAR SIDE



4-LANE, 2-WAY
RIGHT LANE CLOSURE, FAR SIDE



4-LANE, 2-WAY
LEFT LANE CLOSURE, FAR SIDE

GENERAL NOTES FOR ALL DETAILS:

- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection.
- The "BE PREPARED TO STOP" sign shall be used only in conjunction with the FLAGGER symbol sign.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" on Drg. No. TM800
- For left lane work, place TCD to close left lane. Use "LEFT LANE CLOSED AHEAD" sign and "LEFT LANE ENDS" (W4-2) symbol sign.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800.
- When a through road intersects within the work zone, place a "ROAD WORK AHEAD" sign in advance of the intersection at sign spacing A.
- Use plastic drums in lane closure tapers when the posted speed is 45 mph or greater.
- Where shoulder width is limited, Sequential Arrow may be placed within lane closure taper.

• • • • • 28" Tubular Markers
See TCD Spacing Table on TM800 for max. spacings.

• • • 28" Tubular Markers
See TCD Spacing Table on TM800 for max. spacings.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820, TM821 & TM840

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2009

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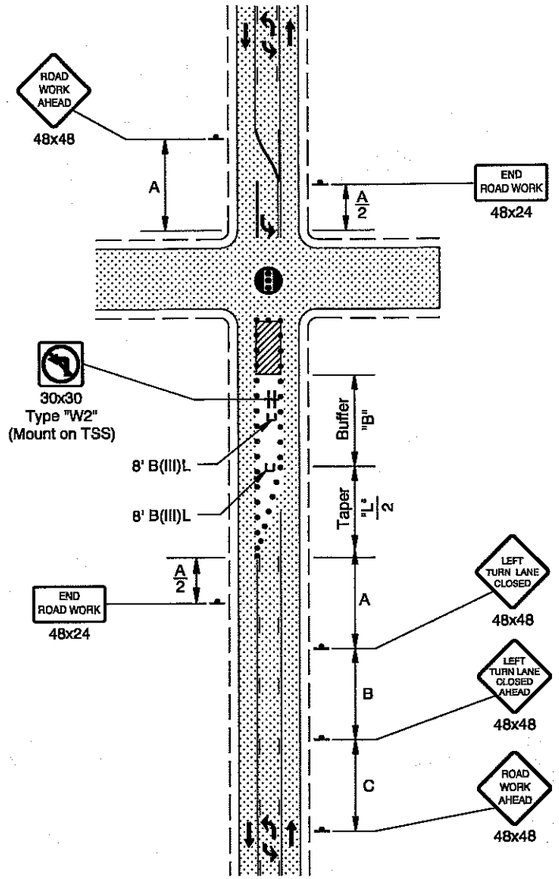
OREGON STANDARD DRAWINGS

INTERSECTION WORK ZONE DETAILS

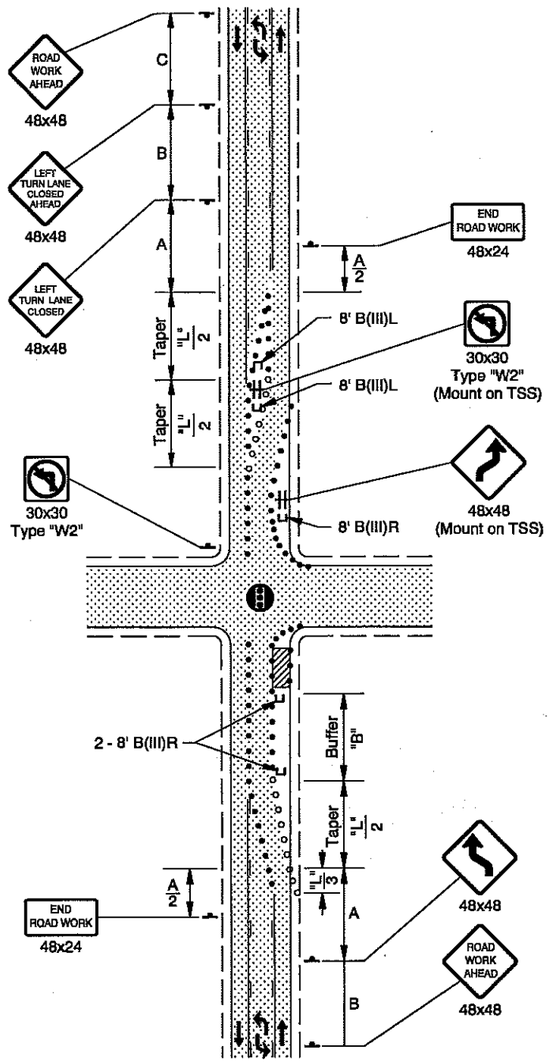
2008

DATE	REVISION DESCRIPTION

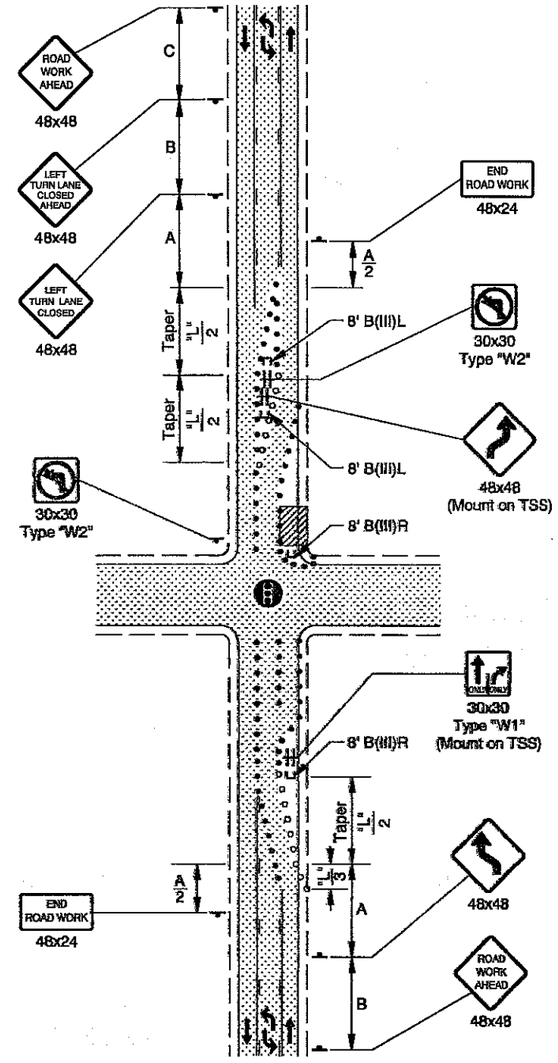
TM841



2-LANE, 2-WAY ROADWAY WITH LEFT TURN MEDIAN
LEFT TURN MEDIAN CLOSURE



2-LANE, 2-WAY ROADWAY WITH LEFT TURN MEDIAN
RIGHT LANE CLOSURE, NEAR SIDE



2-LANE, 2-WAY ROADWAY WITH LEFT TURN MEDIAN
RIGHT LANE CLOSURE, FAR SIDE

GENERAL NOTES FOR ALL DETAILS:

- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection.
- To determine Taper Length ("L") and Buffer Length ("B") shown on this sheet, use the "MINIMUM LENGTHS TABLE" on Drg. TM800
- When a through road intersects within the work zone, place a "ROAD WORK AHEAD" sign in advance of the intersection at sign spacing A.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800.
- Tubular markers may be used in lane closure tapers where the posted speed is less than 45 mph.

Signal

28" Tubular Markers
See TCD Spacing Table on TN800 for max. spacing

Temp. Plastic Drums
See TCD Spacing Table on TM800 for max. spacing

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2009

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OREGON STANDARD DRAWINGS

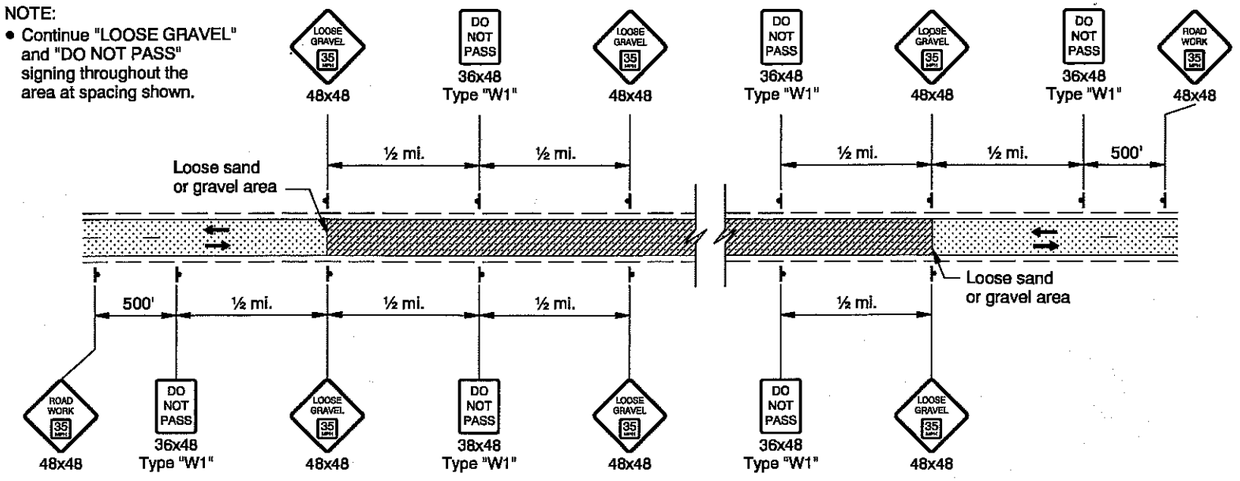
SIGNALIZED INTERSECTION DETAILS

2008

DATE	REVISION DESCRIPTION
07-01-2009	REVISED DRAWING AND NOTES

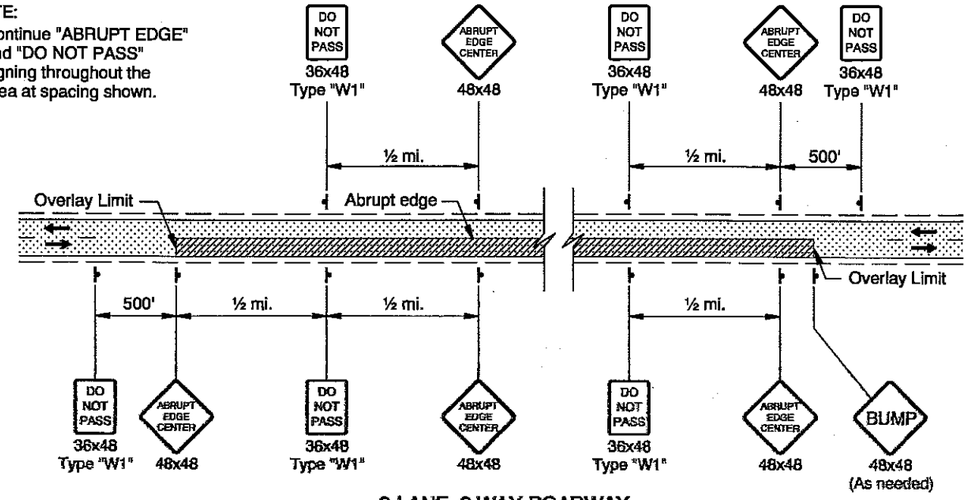
TM842

NOTE:
- Continue "LOOSE GRAVEL" and "DO NOT PASS" signing throughout the area at spacing shown.



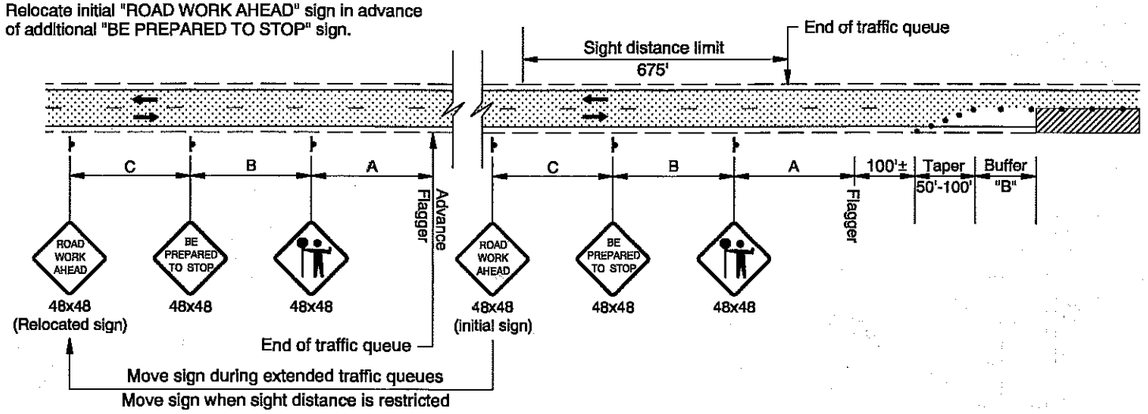
2-LANE, 2-WAY ROADWAY
LOOSE GRAVEL IN ROADWAY

NOTE:
- Continue "ABRUPT EDGE" and "DO NOT PASS" signing throughout the area at spacing shown.



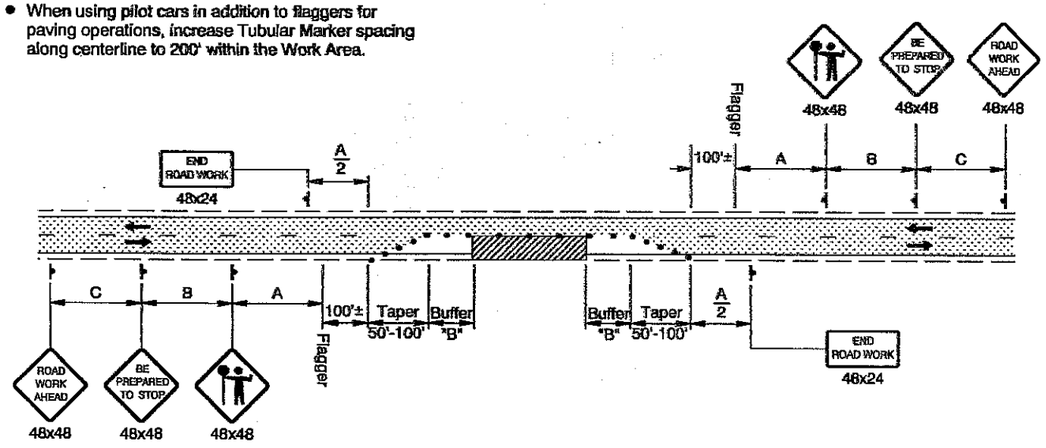
2-LANE, 2-WAY ROADWAY
OVERLAY AREA

NOTES:
- Place Advance Flagger and additional signing when traffic queues extend beyond initial warning signing OR when sight distance is restricted.
- Relocate initial "ROAD WORK AHEAD" sign in advance of additional "BE PREPARED TO STOP" sign.



EXTENDED TRAFFIC QUEUES FOR ADVANCE FLAGGING

NOTE:
- When using pilot cars in addition to flaggers for paving operations, increase Tubular Marker spacing along centerline to 200' within the Work Area.



2-LANE, 2-WAY ROADWAY
ONE LANE CLOSURE

GENERAL NOTES FOR ALL DETAILS:
- The "FLAGGER" symbol sign shall be used only in conjunction with the "BE PREPARED TO STOP" sign.
- Signing and other TCD shown to be installed in conjunction with the work areas, shall move with the work areas.
- Cover existing passing zone signing, as directed.
- Install temporary striping as required.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" shown on Drg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. No. TM800.

- • • • • 28" Tubular Markers on 20' max. spacing for flagger tapers.
- • • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC
UNDER CONSTRUCTION
CONSTRUCTION UNDER TRAFFIC

To be accompanied by Drg. Nos. TM821

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2010

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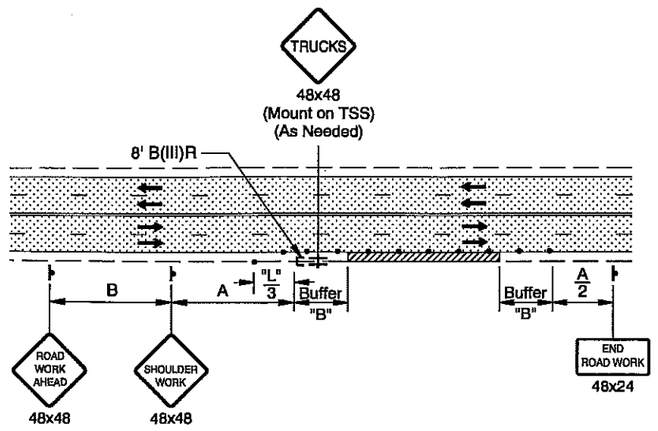
OREGON STANDARD DRAWINGS

2-LANE, 2-WAY ROADWAYS

2008

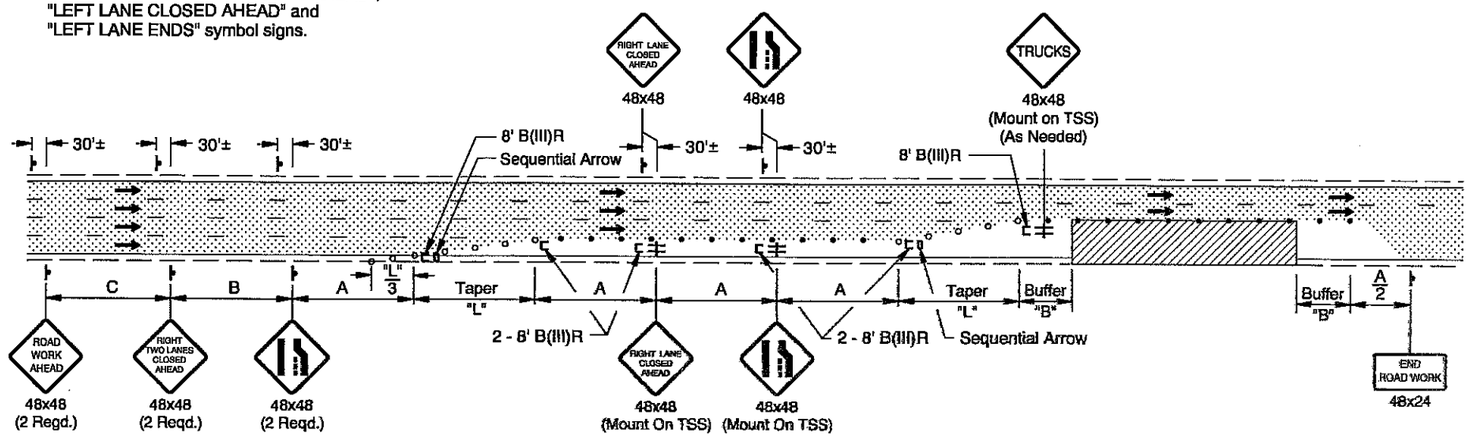
DATE	REVISION DESCRIPTION
07-01-2009	REVISED NOTES
01-01-2010	REVISED NOTES

01-JAN-2010
tm850.dgn
TM850

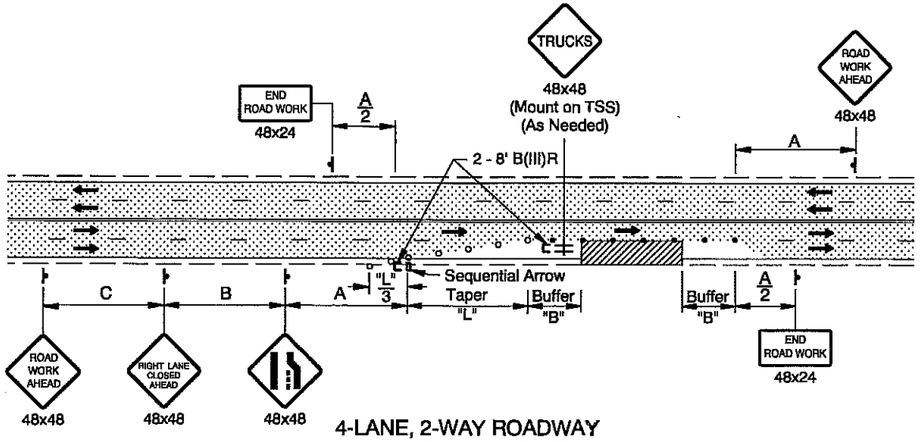


4-LANE, 2-WAY ROADWAY
SHOULDER CLOSURE

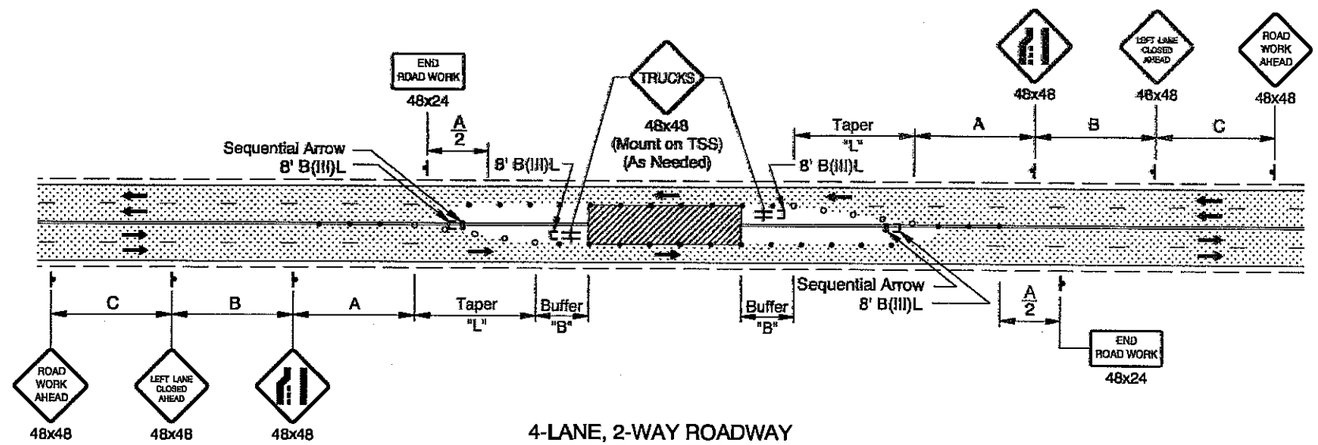
NOTE:
- For left lane work, place TCD to close the left lane. Use "LEFT TWO LANES CLOSED AHEAD", "LEFT LANE CLOSED AHEAD" and "LEFT LANE ENDS" symbol signs.



4-LANE, 1-WAY ROADWAY
TWO LANE CLOSURE



4-LANE, 2-WAY ROADWAY
EXTERIOR LANE CLOSURE



4-LANE, 2-WAY ROADWAY
INTERIOR LANE CLOSURE

GENERAL NOTES FOR ALL DETAILS:

- Install temporary striping as directed.
- Signing and other TCD shown to be installed in conjunction with the work areas, shall move with the work areas.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" on Drg. No. TM800
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. No. TM800.
- Channelization devices may be placed at 10' spacing around the Work Area for emphasis or if the area is exposed to traffic on both sides simultaneously.

• • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

o o o Temp. Plastic Drums See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2010

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OREGON STANDARD DRAWINGS

NON-FREEWAY MULTI-LANE SECTIONS

2008

DATE	REVISION DESCRIPTION
01-01-2010	REVISED NOTES

TM851

tm851.dgn 01-JAN-2010