Olympic Region
Pavement Markings Policy

1/3/2002 Revision

PURPOSE:

The purpose of this document is to formalize the Olympic Region's policy and practices regarding pavement markings. It is not intended to be a substitute for any official WSDOT or federal manual but rather to supplement and clarify them and to answer commonly asked questions. Questions can be directed to Warren Wutzke (360) 704-3225 or John Nisbet (360) 357-2670.

REFERENCES:

- Standard Specifications Sections 8-22 and 9-34 and Amendments
- MUTCD Part 3
- Standard Plans H-3 thru H-5
- Olympic Region Special Provisions

DEFINITIONS:

- BLOCKED CROSSWALK: Also known as "High Visibility", "Piano Key", or "Bar" type crosswalk as shown in standard plan H-5c.
- ENTRAPMENT or DROP LANE: A thru lane that becomes a mandatory turn lane. If you have to make a maneuver to get into the turn lane it is a turn pocket not an Entrapment Lane.
- NARROW PATTERN CENTERLINE: A centerline pattern that is 12" wide when a double or single no-pass line is used. The narrow pattern is striped with two paint guns. Each gun alternates between a skip pattern and a solid (no-pass) line as no-pass zones change from one side to the other.
- PROFILED PLASTIC LINE: Profiled lines are described in the Standard Specs. Section 8-22.3(3)
- RPM: Raised Pavement Marker
- STENCIL WORK: Crosswalks, stop lines, arrows, letters, and symbols.
- TYPE D PLASTIC: Methyl methacrylate (commonly referred to as durable plastic)
- WIDE PATTERN CENTERLINE: A centerline pattern that is 20" wide when double no-pass lines are used. The skip line (when present) is on the center of the roadway on two lane roads. The wide pattern is striped with three paint guns. Each gun paints only one type of line (skip centerline or solid no-pass line). The skip centerline is omitted in double no-pass areas.

DISCUSSION:

MATERIALS:

- **Definitions of plastic types** are found in Section 9-34 of the Standard Specifications.
- **Stencil Work:** Plastic material should be used for Stencil Work except for temporary applications.
- **Stencil Work:** Type D Plastic material should be used on stencil work where thermoplastic does not last one season. That is, maintenance needs to be performed on the mark every year. See Appendix C for the current list.
- **Type D Profiled Plastic Lane Lines List:** Lane lines and Drop Lane Lines should be Profiled Type D Plastic and Wide Lines should be Type D Plastic in the following areas unless an upcoming contract would require their removal within 6 years:

I-5	All
SR 512	All
SR 16	I-5 to Purdy
SR 16	SR 166 to SR 3
SR 101	SR 8 to I-5
SR 3	SR 16 to SR 310
SR 167	SR 512 to King County

- **Drop Lanes:** All freeway drop lane arrows and ONLY's should be in Type D Plastic material.
- **Edge lines** should be paint except for material trials.

CENTERLINES:

- **Wide Pattern:** It is the Olympic Region policy to use the Wide Pattern Centerline also known as the three-gun pattern. Use Olympic Region's GSP-CTRSTRPE.DT3 on all projects with centerline striping.
- **Narrow Pattern:** Some sections of roadway now have the Narrow Pattern Centerline. These centerlines should be replaced with the Wide Pattern unless it is a section with the Narrow Pattern on both ends.
- **Connecting No-Pass Zones:** No gap between consecutive no-pass zones shall be less than 520 feet. The statutory no-pass zone 100 feet each side of intersections is typically not striped but is considered in these measurements.
- **18" Yellow Barrier Lines and crosshatched channelization/median** are illegal to cross. They should only be used if approved by the Traffic Engineer. When needed, the 18" Barrier Line is usually preferred over the crosshatching for maintenance reasons.

RPM'S USED AS POSITIONING GUIDES:

- **Type 2 RPM's** are used as positioning guides (see MUTCD section 3B-14) everywhere in Olympic Region except as noted below or where RPM's are used to substitute for striping (see MUTCD section 3B-16 and Standard Plan H5d).
- **Where Type D Profiled Plastic Lane Lines** are used; Type 2 RPM's are used as positioning guides in areas not continuously illuminated. No RPM's are needed where Type D Profiled Plastic Lane Lines are used in continuous illumination areas.

- **Spacing** shall be 80 feet for centerlines, lane lines, wide lines, and left edge lines except in lane reduction transitions and curves requiring warning signs where spacing shall be 40 feet. On drop lane lines, placement should be every other skip in the skip section and 80 foot spacing on the solid wide line part.
- **Placement** is in line with and midway between line segments for broken types of lines, and 4 inches from the line on the "away from traffic" side for continuous types of lines.
- **Recessed:** In areas of heavy snowfall, RPM's should be recessed. Discuss this with the responsible Area Maintenance Superintendent.
- **Ramps:** Type 2 RPM's should be used on the left edge line of ramps where the end of the ramp cannot be seen from the gore area and the ramp is not illuminated.
- **Right Edge Lines:** RPM's should not normally be used on right edge lines. The Traffic Engineer must approve any right edge line RPM applications.

CROSSWALKS:

- **Replacing:** Existing crosswalks across side roads at non-signalized intersections are being evaluated for removal. Before replacing these, please check with the Traffic Office.
- **Adding:** Crosswalks should only be added to the system after consulting with the Traffic Office.
- **Type:** All crosswalks should be the "Blocked" type as shown in Standard Plan H-5c.
- **Positioning:** When positioning crosswalks, it is critical that the pedestrians are as visible as possible to drivers who might cross the crosswalk including traffic in the right lane parallel to the crosswalk.
- **Skewing:** Crosswalk bars can be skewed to better match the roadway alignment. The idea is to keep the bars out of the wheel tracks as much as possible.

STOP LINES:

- **Positioning:** Stop lines mark the desired stopping point. They must be at least 4 feet back from the nearest edge of the intersecting roadway or marked crosswalk (if there is one). Where pedestrians are present and no crosswalk is used, the stop line should be moved back to 8 to 12feet back from the intersecting roadway. The main consideration is sight distance for the driver sitting at the stop line. If that sight distance would not be affected, the stop line can be moved back to allow a greater turning radius for trucks turning left in front of the stop line. Stop lines should not normally be more than 30 feet from the edge of the intersecting roadway.
- **All intersecting Roads:** It is WSDOT policy to use stop lines on all intersecting publicly owned stop sign controlled roads and all signal controlled roads.
- **Turn Pockets:** Unless a need is shown by an engineering study, stop lines should not be used in turn pockets at unsignalized intersections.
- **Dog Legs:** For maintenance reasons stop lines should be straight and parallel to the intersecting roadway whenever possible. The practice of placing the right lane at an angle to the rest does not save enough material to justify the increased time to install and maintain it.

LANE CONTROL ARROWS AND TRAFFIC LETTERS:

- **Entrapment (Drop) Lanes:** Type 2 arrows and ONLY's are required in Entrapment Lanes (see definitions). In double turn lanes, if one lane is an Entrapment Lane and the other is a turn pocket, both lanes should get ONLY's.
    - **On arterials** a Drop Lane Line should extend the Wide Line upstream but no farther back then the previous intersection. An "ONLY" and Type 2 Arrow should be placed at the beginning of the Drop Lane Line.
    - **On freeways** two or three sets of arrows and ONLY's spaced about 500' to 1,000' apart starting near the first overhead "exit only" sign are usually enough. The last set should be no closer than 500' from the gore. Lane reduction transitions, or a left or right turn pockets are not drop lanes. On multiple lane exits where one lane has the option to exit or not, the option lane should receive a type 3 (combination) arrow in line with each type 2 (turn) arrow in the other lane(s).
- **Turn Pockets:** Type 2 arrows should be used in turn pockets. One should be about 50 feet from the end of the pocket; another should be at the beginning of the turn pocket white wide line (formerly known as gore line). If the pocket is over 600'±, additional arrows can be added at 300'± spacing. ONLY's should not be used in turn pockets except in double turns where one lane is an Entrapment Lane and the other is a turn pocket, both lanes should get ONLY's.
- **Straight "Pull thru" (type 1) arrows** are normally not needed. Use only to clarify otherwise confusing situations.
- **Wrong Way Arrows:** Two wrong way arrows (type 5) should be used in each lane on all freeway off ramps and prior to at grade intersections on divided highways. One should be 50 feet from the intersection or stop line, the other approx. 200 feet further upstream. When used, lane use (types 1-4) arrows substitute for wrong way arrows.

LANE REDUCTION (MERGE) ARROWS:

- **New Arrow Design:** See figure 1 for new lane reduction (merge) arrows. Type 6 is for use prior to lane reduction transitions on mainlines. Type 6b is for use in acceleration lanes and other slower speed locations such as lane reductions on ramps. This arrow has not been officially adopted, but it is in the 2000 MUTCD (which should be adopted in 2002) it can be used for demonstration or "trial" purposes. Slanted Type 1 or Type 5 arrows should no longer be used for "merge" arrows.
- **Where to use:** Lane Reduction Arrows are not required at every lane reduction. They are warranted in the following cases:
    - Lane reductions in areas covered in the "Type D Profiled Plastic Lane Line List" (page 2).
    - Multiple consecutive lane reductions.
    - Consider use where less than 10 foot shoulders are past the transition.
    - Where geometrics limit sight distance to the transition.
    - Where other distractions may cause drivers to miss the lane reduction signs.
- **Acceleration Lanes** are not Lane Reductions and should only receive arrows if geometrics limit sight distance to the transition or to correct operational deficiencies.

DOTTED EDGE LINE EXTENSIONS:

- **Where to use:** Edge line extensions should only be used where they are needed to clarify an otherwise confusing situation such as an extra wide intersection on the outside of a curve or an intersecting roadway at the beginning of a curve that is in line with the highway so as to give the appearance that the highway goes straight.
- **Illuminated intersections:** Edge line extensions are normally not needed at illuminated intersections.
- **Materials:** Where used, edge line extensions should be plastic – Type D Plastic if Type D Plastic will be used elsewhere on the job.
- **Current list:** See Appendix A for the current list of intersections that have been deemed appropriate for edge line extensions.
- **Roundabouts** are the exception to the above. Dotted edge line extensions are required across the entrances to roundabouts.
- **Intervals** shall be a 2-foot line with a 6-foot gap except for roundabouts where the interval shall be a 2-foot line with a 3-foot gap. Widths should match the line being extended.

OTHER DOTTED LINE EXTENSIONS:

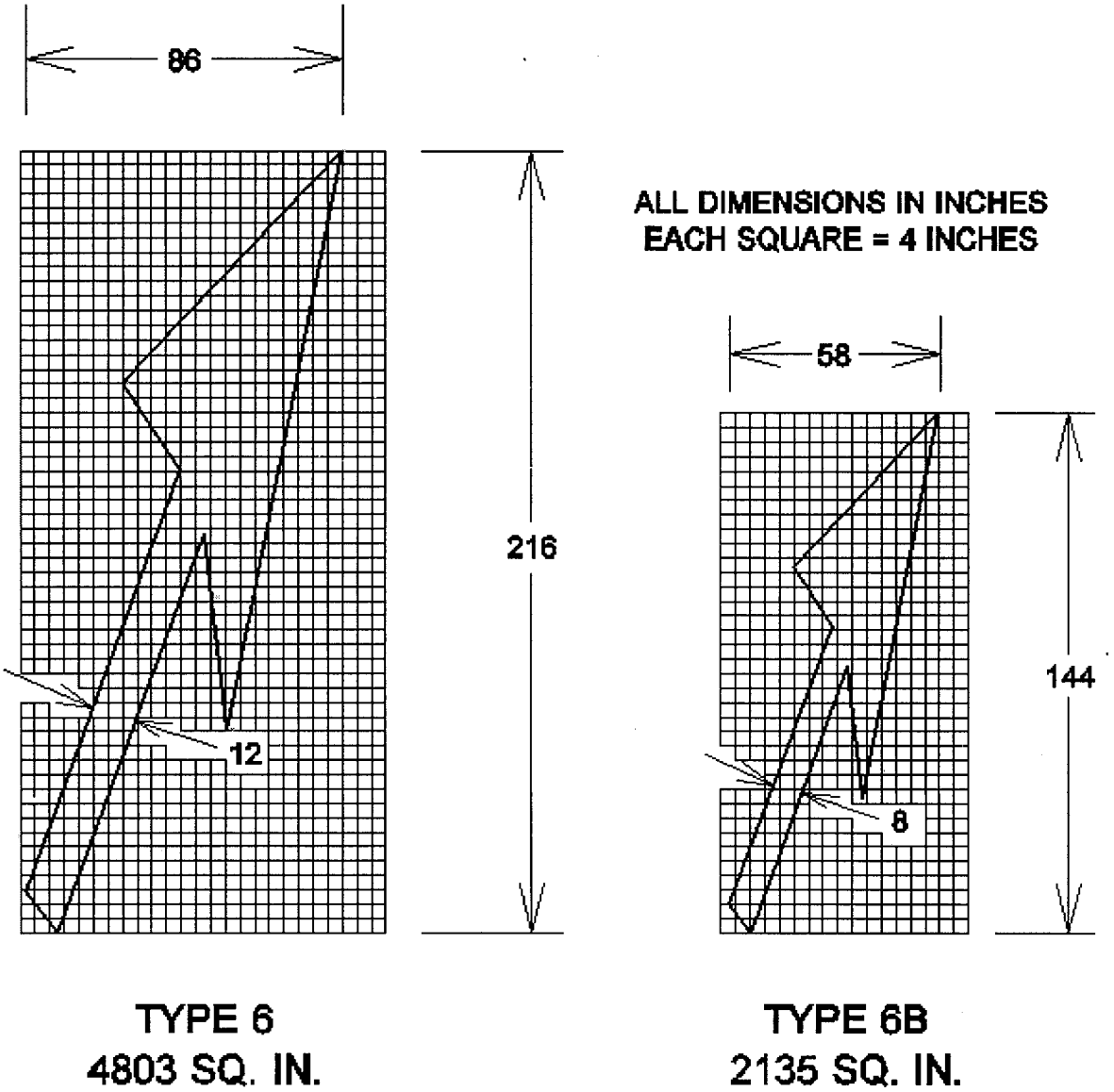
- **Any line can be extended** with a dotted extension if needed to guide traffic. The dotted extension should be the same width and color as the line being extended. The interval should be a 2-foot line with a 6-foot gap. The material should be Raised Pavement Markers or Type D Plastic.
- **Multiple Turn Lanes:** The line(s) between multiple turn lanes should always be extended thru the intersection.
- **Confusing or mismatched alignments** can be clarified with centerline and/or lane line extensions.

MILE AND HALF-MILE SHOULDER MARKS:

- **These are** WSP Aerial Surveillance Marks.
- **Where to use:** Some existing courses are no longer needed. See Appendix B for a current list of certified courses. These are the only courses that need to be maintained or replaced after paving.
- **Accuracy:** Each half-mile distance must be accurate to ±10'.

ADDITIONAL ITEMS:

- **Multiple Turn Lanes:** The line between the turning lanes should be a solid 4-inch line. The line separating mandatory turn lanes from thru or option lanes should be an 8-inch solid line (wide line).



Lane Reduction Arrows

(Left lane transitions shown. Reverse for right lane transitions)

FIGURE 1

APPENDIX A

Edge Line Extensions

SR	MP	INTERSECTION
3	59.84	S BRIDGE WAY
5	110.84	N.B. off ramp @ Galaxy Dr. roundabout bypass
7	21.69	Alder Cut-Off Rd.
7	26.99	SR 161
7	28.52	EATONVILLE HWY. WYE CONN
7	28.59	EATONVILLE HWY
20	1.84	EAGLEMONT RD
20	3.68	ANDERSON LAKE RD
101	74.37	NORTH RIVER RD
101	90.31	OLD STATE 9
101	90.60	WEIGH STA
101	90.72	WEIGH STA
101	102.06	POLSON CAMP RD
101	106.54	BOWES RD
101	108.37	E HUMPTULIPSRD
101	109.98	MCNUTT RD
101	167.59	LOWER HOH VILLAGE RD
101	177.33	OIL CITY RD
101	178.49	UPPER HOH RD
101	193.38	WEIGH STA
101	203.86	BURNT MTN RD
101	213.01	SNIDER RD
101	267.43	PALO ALTO RD
101	268.52	W SEQUIM BAY RD
101	271.53	CHICKEN COOP RD
101	282.27	W UNCAS RD WYE CONN
101	292.75	LORDS LAKE LOOP RD
101	296.10	PENNY CREEK RD
101	309.99	DUCKABUSH RD
104	16.82	RAINIER AVE
105	38.00	OLD WESTPORT/RUSTMEYER RD

SR	MP	INTERSECTION
109	3.48	HARBOR VIEW CT
109	3.67	BROADWAY HILL RD
109	13.34	BURROWS RD
109	18.04	PACIFIC BLVD/SECOUND AVE
109	21.09	BENNER RD
109	21.29	COPALIS BEACH RD
109	31.59	SECOND ST
110	3.09	QUILLAYUTE RD
110	7.80	110 SPUR
110S	8.59	KILMER RD
110S	10.46	QUILLAYUTE RD
112	9.74	SEKIU RIVER RD
112	12.53	HOKO/OZETTE RD
112	29.78	PILLAR PT RD
112	45.80	W LYRE RIVER RD
112	46.47	E LYRE RIVER RD
112	59.12	OLD SR 112/ELWA RIVER RD
112	60.38	POWER PLANT/LOWER DAM RD
115	0.37	DAMON RD
116	2.92	NAVAL STATION
116	4.79	ROBBINS RD
303	5.43	BROWNSVILLE HWY WYE CONN
303	5.86	GLUD RD WYE CONN
507	6.62	FLUMERFELT RD
507	6.87	CONNER RD
507	16.77	OLD MILITARY RD SE
507	35.88	PETERSON RD (use buttons)
507	35.98	WATER ST
510	12.90	SOUTHWORTH ELEM. SCHOOL
510	13.50	MUD RUN RD

APPENDIX B

WSDOT Olympic Region WSP Surveillance Courses

SR	From MP	To MP	Direction	SR	From MP	To MP	Direction
3	42.5	40.5	SB	101	237.8	234.8	WB
3	49	46.5	SB	101	256.5	253.5	WB
3	45.5	48	NB	101	266	263	WB
5	112	108	SB	101	351	357	SB
5	109.5	118	NB	101	356	351.5	NB
7	36	40	NB	101	364.6	362.6	WB
8	0	4	both	101	361.6	362.6	EB
8	13.3	15.3	EB	104	1	10.5	EB
8	18.3	16.3	WB	104	14	15	centerline
8	19.7	20.2	EB	109	7	8.5	NB
12	11	15.5	EB	167	8	11	NB
12	15.5	13	WB	167	11	8	SB
16	16	19	NB	410	3.5	11	EB
16	23	26.5	NB	410	11.5	9.5	WB
19	14	12	SB	512	3	8	EB
				512	7.5	3	WB

APPENDIX C

Locations for Type D Plastic Stencil Work

SR003

MP 0 to 4
MP 34.26 Sam Christopherson /SR 16SPGORST
MP 45 to 46.37

SR 005

ALL OF I-5

SR 007

MP47 to 58.3

SR 016

MP 0 to 12.3
MP 28.85 to 39.19

SR 016SPGORST

ALL OF GORST SPUR

SR 20

MP 7.85 Jct. SR 19
MP 9.8 to 12.88

SR101

MP 364.8 TO I-5

SR104

MP 15.54 Jct. SR 3
MP 22 Hansville – Miller Bay Rd
MP 23.89 to 24.45

SR 117

ALL OF SR117

SR 160

MP 0 to 1.0

SR 161

MP 18.0 TO 29.1

SR 162

MP 0 TO 9.83

SR 165

MP 19.6 Jct. SR 162
MP 21.2 Jct. SR 410

SR 166

MP 2.5 to End

SR 167

I-5 Interchange
MP 3.66 48th St E/66th Ave E
MP 6.48B (Puyallup River Br.) to End

SR 167COPUYALP

All of Couplet

SR 302

MP 10.57 Elgin Clifton Rd
MP 13.25 to End

SR 303

All Signalized Intersections

SR 305

All Signalized Intersections

SR 410

MP 12.72 to 21.99

SR 509AR

ALL OF SR 509

SR 510

MP 0 to 4.4

SR 512

ALL OF SR 512

SR 705

ALL OF SR 705

SR 706

All of SR 706 except side rd. stop lines & crosswalks