

SUMMARY OF ROADWAY LUMINAIRE TEST RESULTS  
(1971-72)

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MICHIGAN DEPARTMENT OF STATE HIGHWAYS

SUMMARY OF ROADWAY LUMINAIRE TEST RESULTS  
(1971-72)

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Testing and Research Division  
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Michigan State Highway Commission  
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Vice-Chairman, Claude J. Tobin, Peter B. Fletcher  
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The following tables are a summary of luminaire test information for the past two years. Luminaires from 36 construction projects are included in this summary. This summary began with those projects active by January 1, 1971 and continuing through May 1, 1973. All luminaires previously sampled for these projects, regardless of sampling date, are also included in the summary.

The failure and specification data for each type luminaire tested were listed by project. These data were then summarized and tabulated by manufacturer and by contractor.

Table 1 shows the grand totals of luminaires for all manufacturers and contractors. Tables 2, 3, 4 and 5 show breakdown by luminaire manufacturer of these totals, General Electric, Holophane, McGraw-Edison, and Westinghouse, respectively. Table 2 shows summaries for contractors using General Electric luminaires. Table 3 is the summaries for the Holophane Co. contractors. Table 4 is the McGraw-Edison Co. contractor summary. Table 5 is the Westinghouse Electric Co. contractor summaries. Luminaire summaries for each contractor are listed in Table 6. Note that included in Table 6 is the summary for Holophane underbridge luminaires only, for the contractor, Gale Electric; that Table 6 also contains the summary for Holophane underbridge luminaires only, for the contractor, Hydon-Brand.

Each table has several categories of summaries. The "Quantity Tested" category represents all those luminaire samples and resamples received, tested, and reported by the laboratory. The "Luminaires on Project" category refers to the probable number of luminaires to be installed. The "Quantity Represented" includes the luminaire quantities in the "Luminaires on Project" category plus the luminaires sampled because of rejections.

The "Quantity Approved," "Quantity Recommended for Use," and "Quantity Rejected" figures are the dispositions of the luminaires in the "Quantity Represented" category.

The "Quantity Rejected by Type of Test" shows the quantity of luminaires rejected (at least in part) for the reason shown.

The summaries are repeated for luminaire reflectors. The grand totals are shown in Table 7. The totals by manufacturer (GE and Westinghouse) are listed in Tables 8 and 9. Table 10 is the summaries by contractor.

The summary of all luminaires, Table 1, shows that there were 157 luminaires altogether tested out of 2,398 luminaires represented ("Quantity Represented"). There were a total of 2,125 luminaires to be installed on the projects ("Luminaires on Project"). The total "Quantity Represented" (2,398) is greater than the total "Luminaires on Project" (2,125) because of resampling or reshipment following rejections. Of the 2,398 luminaires in the shipments sampled, 447 or 18.6 percent, were recommended for use, and 837 or 34.7 percent, were rejected.

Of the 1,284 luminaires recommended for use or rejected, 1,129 were for insufficient anodic coating thickness or coating seal, 191 for improper light distribution and 80 were for improper fuse, ballast, gasket materials, or for cadmium plated or unplated hardware (should be stainless steel, aluminum alloy, or zinc plated steel).

TABLE 1  
SUMMARY OF ALL LUMINAIRE MANUFACTURERS AND CONTRACTORS

Luminaire Size and Type	Quantity Tested	Quantity Reprinted	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test		
							Anodic Coating	Light Distribution	Other
250 w / II	25	292	288	62	111	119	214	16	
250 w / IV	4	4	2		2	2	2	2	
400 w / II	44	645	557	265	34	346	309	46	27a
400 w / III	46	700	606	315	244 <sup>f</sup>	141	351	125	21b
400 w / IV	1	16	16	16					
700 w / IV	1	2	2		2				2 <sup>c</sup>
1000 w / III	36	739	654	456	54	229	253	2	30 <sup>d</sup>
Total	157	2398	2125	1114	447	837	1129	191	80

Underbridge luminaires (250 w / UB)	14	307	191	195		112			112 <sup>e</sup>
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June 1, 1973

Notes:

- a defective fuse or ballast
- b improper gasket material
- c hardware, cadmium plated
- d defective latch
- e power factor, low
- f includes 92 recommended for use with price adjustment

TABLE 2  
SUMMARIES OF CONTRACTORS USING GENERAL ELECTRIC LUMINAIRES

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Reprinted	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test			
								Anodic Coating	Light Distribution	Other*	
250 w / II	ALL CONTRACTORS	19	244	240	46	111	87	198			
250 w / IV		4	4	2		2	2	2	2		
400 w / II		36	505	417	133	26	346	305	46	23 <sup>a</sup>	
400 w / III		18	236	236	92	54	90	144			
400 w / IV		1	16	16	16						
1000 w / III		30	470	446	248	54	168	192	2	30 <sup>b</sup>	
Total		108	1475	1357	535	247	693	841	50	53	
400 w / III		Casseus Electric	1	4	4			4	4		
1000 w / III		Casseus Electric	1	2	2			2	2		
Total			2	6	6			6	6	2	
250 w / II	Hydon-Brand	1	32	32		32		32			
400 w / II		3	33	33	15	21	12	12		21 <sup>a</sup>	
400 w / III		3	15	15		24	53	77			
1000 w / III		6	77	77		77	65	121		21	
Total		13	157	157	15	157	121	211			
250 w / II	J. Miller	8	145	145	42	79	24	103			
400 w / II		22	306	218	97	3	206	165	46		
400 w / III		8	152	152	56	54	42	96			
1000 w / III		12	180	156	80	30	70	70		30 <sup>b</sup>	
Total	50	783	671	275	166	342	434	46	30		
250 w / II	Harlan Electric	10	67	63	4		63	63			
250 w / IV		4	4	2		2	2	2	2		
400 w / II		11	166	166	36	2	128	128		2 <sup>a</sup>	
400 w / III		6	65	65	21		44	44			
400 w / IV		1	16	16	16						
1000 w / III		11	211	211	168		43	43			
Total	43	529	523	245	4	280	280	2	2		

June 1, 1973

Notes:

a defective fuse or ballast

b defective latch

TABLE 3  
SUMMARIES OF CONTRACTORS USING HOLOPHANE (UNDERBRIDGE) LUMINAIRES

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Re-presented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test		
								Anodic Coating	Light Distribution	Other*
250 w / UB	All Contractors	14	307	191	195		112			112
250 w / UB	Hydon-Brand	2	126	61	65		61			61
250 w / UB	J. Miller	6	93	73	73		20			20
250 w / UB	Harlan Electric	4	76	45	45		31			31
250 w / UB	W. D. Gale	2	12	12	12					

\* power factor

June 1, 1973

TABLE 4  
SUMMARY OF HARLAN ELECTRIC (ONLY CONTRACTOR) USING MCGRAW-EDISON LUMINAIRES

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Re-presented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test		
								Anodic Coating	Light Distribution	Other
250 w / II	Harlan Electric	2	16	16		4	16			16
400 w / II	Harlan Electric	2	4	4						
400 w / III	Harlan Electric	2	17	17			17			17
Total		6	37	37		4	33	4		33

June 1, 1973



TABLE 5  
SUMMARIES OF CONTRACTORS USING WESTINGHOUSE LUMINAIRES

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Re-presented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test			
								Anodic Coating	Light Distribution	Other	
ALL CONTRACTORS											
250 w / II		4	32	32	16	16	16	16			
400 w / II		6	136	136	132	4 <sup>d</sup>	34	207	108		4 <sup>a</sup>
400 w / III		26	447	353	223	190 <sup>d</sup>	2				21 <sup>d</sup>
700 w / IV		1	2	2							2 <sup>c</sup>
1000 w / III		6	269	208	208		61	61			
Total		43	886	731	579	196 <sup>d</sup>	111	284	108		27
250 w / II	W. D. Gale	2	16	16	16						
400 w / III	W. D. Gale	2	8	8	8						
Total		4	24	24	24						
1000 w / III	Hall Electric	2	122	61	61		61	61			
250 w / II	Harlan Electric	2	16	16			16	16			4 <sup>a</sup>
400 w / II	Harlan Electric	2	4	4		4					
400 w / III	Harlan Electric	6	51	17		17	34	34	34		
Total		10	71	37		21	50	50	34		4
400 w / II	HI Voltage Systems	2	76	76	76						
400 w / III	HI Voltage Systems	18	388	328	215	173 <sup>d</sup>		173	74		21 <sup>b</sup>
1000 w / III	HI Voltage Systems	2	77	77	77						
Total		22	541	481	368	173		173	74		21
400 w / II	J. Miller	2	56	56	56						
700 w / IV	J. Miller	1	2	2		2					2 <sup>c</sup>
1000 w / III	J. Miller	2	70	70	70						
Total		5	128	128	126	2					2

June 1, 1973

Notes:

- a defective fuse or ballast
- b improper gasket material
- c hardware cadmium plated
- d includes 92 recommended for use with price adjustment

**TABLE 6**  
**LUMINAIRE SUMMARY BY CONTRACTOR**

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Represented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected	Failure Test		
								Anodic Coating	Light Distribution	Other
400 w / II	Casseus Electric	1	4	4			4	4		
1000 w / III	Casseus Electric	1	2	2			2	2	2	
Total		2	6	6			6	6	2	
250 w / II	W. D. Gale	2	16	16	16					
400 w / III	W. D. Gale	2	8	8	8					
Total		4	24	24	24					
250 w / UB	W. D. Gale	2	12	12	12					
1000 w / III	Hall Electric	2	122	61	61		61	61		
250 w / II	Harlan Electric	14	99	95	4		95	79	16	
250 w / IV	Harlan Electric	4	4	2		2	2	2		
400 w / II	Harlan Electric	15	174	174	36	10	128	132		6 <sup>a</sup>
400 w / III	Harlan Electric	14	133	99	21	17	95	78	51	
400 w / IV	Harlan Electric	1	16	16	16					
1000 w / III	Harlan Electric	11	211	211	168		43	43		
Total		59	637	597	245	29	363	334	69	6
250 w / UB	Harlan Electric	4	76	45	45		31			31 <sup>e</sup>
400 w / II	Hi Voltage Systems	2	76	76	76					
400 w / III	Hi Voltage Systems	18	388	328	215	173 <sup>f</sup>		173	74	21 <sup>b</sup>
1000 w / III	Hi Voltage Systems	2	77	77	77					
Total		22	541	481	368	173		173	74	21
250 w / II	Hydon-Brand	1	32	32		32		32		
400 w / II	Hydon-Brand	3	33	33		21	12	12		21 <sup>a</sup>
400 w / III	Hydon-Brand	3	15	15	15					
1000 w / III	Hydon-Brand	6	77	77		24	53	77		
Total		13	157	157	15	77	65	121		21
250 w / UB	Hydon-Brand	2	126	61	65		61			61 <sup>e</sup>
250 w / II	J. Miller	8	145	145	42	79	24	103		
400 w / II	J. Miller	24	362	274	153	3	206	165	46	
400 w / III	J. Miller	8	152	152	56	54	42	96		
700 w / IV	J. Miller	1	2	2		2				2 <sup>c</sup>
1000 w / III	J. Miller	14	250	226	150	30	70	70		30 <sup>d</sup>
Total		55	911	799	401	168	342	434	46	32
250 w / UB	J. Miller	6	93	73	73		20			20 <sup>e</sup>

June 1, 1973

Notes:

- a defective fuse or ballast
- b improper gasket material
- c cadmium plated hardware
- d defective latch
- e power factor, low
- f includes 92 recommended for use with price adjustment

TABLE 7  
SUMMARY OF ALL LUMINAIRE REFLECTORS MANUFACTURERS AND CONTRACTORS

Luminaire Size and Type	Quantity Tested	Quantity Represented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected
250/400 w	38	730	578	159	419	152
1000 w	20	378	143	—	197	181
Total	58	1108	721	159	616	333

June 1, 1973

TABLE 8  
SUMMARY OF GENERAL ELECTRIC LUMINAIRE REFLECTORS

Luminaire Size and Type	Quantity Tested	Quantity Represented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected
250/400 w	36	714	562	159	403	152
1000 w	20	378	143	—	197	181
Total	56	1092	705	159	600	333

June 1, 1973

TABLE 9  
SUMMARY OF WESTINGHOUSE REFLECTORS

Luminaire Size and Type	Quantity Tested	Quantity Represented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected
250 w	2	16	16	—	16	—

June 1, 1973

TABLE 10  
SUMMARY OF CONTRACTORS INSTALLING LUMINAIRE REFLECTORS

Luminaire Size and Type	Contractor	Quantity Tested	Quantity Represented	Luminaires on Project	Quantity Approved	Quantity Recommended for Use	Quantity Rejected
250	W. D. Gale	2	16	16		16	
250/400	Harlan Electric	16	393	272		272	121
1000	Harlan Electric	6	43	43		43	
Total		22	436	315		315	121
400	Hydon-Brand	4	24	12		12	12
1000	Hydon-Brand	8	272	54		108	164
Total		12	296	66		120	176
250/400	J. Miller	16	297	278	159	119	19
1000	J. Miller	6	63	46		46	17
Total		22	360	324	159	165	36

June 1, 1973