Cost estimates

COST STUDY TO DETERMINE AVERAGE CUSTOM PRINT COST FOR SIX MONTH PERIOD 1 NOV 65 THROUGH 30 APR 66

Black & White	SIZE	NUMBER OF PRINTS	PERCENT OF TOTAL PRINTS	CHEMICAL COST \$	PAPER COST \$	FILM COST \$	LABOR COSTS \$	WATER RESIN COSTS \$	TOTAL COSTS \$	COST PER PRINT \$
	5 x 7 8 x10 11 x 14	949 7,946 <u>13,058</u> 21,953	4.0 36.0 60.0	35.00 314.00 <u>524.87</u> 873.87	72.77 1,160.63 3,670.49 4,903.89	1,186.70	1,116.45 10,048.07 16,746.78 27,911.30	21.17 190.51 317.52 529.20	1,245.39 11,713.21 21,259.66 34,218.26	1.31 1.47 1.63
Color	5 X7 8 X10 11 X 14	949 13,054 989 14,992	6.3 87.2 6.5	150.70 2,240.99 166.30 2,557.99	135.19 3,620.21 631.80 4,387.20	2,712.99	1,172.28 16,225.77 1,209.49 18,607.54	22.23 307.64 22.93 352.80	1,480.40 22,394.61 2,030.52 25,905.53	1.56 1.72 2.05

- NOTES: 1. From the ratio of B/W to color prints produced, it was determined that B/W represents 60% and color represents 40% of the Photo Lab effort. These percentages were used to determine cost break out for those items which are common to both B/W and color print production. As an example, the total labor cost during the 6 month period was \$46,518.84. 60% of this figure or \$27,911.30 is the labor cost for B/W print production. 40% of this figure of \$18,607.54 is the labor cost for color print production.
 - 2. Within the B/W and color categories, a further percentage break down was made by size of print produced (actual count) and used to determine costs within each category. As an example 949 5X7 B/W prints represent 4% of the total B/W effort.

 4% of the total B/W labor costs is \$1,116.45.
 - 3. Actual costs of film, color and black and white, are shown but were not included in the cost of each print. The total dollar cost for each type film divided by the total number of each type print results in an average cost per print of .05¢ for B/W and .18¢ for color.
 - 4. The following items were excluded from the cost determination:
 - a. Equipment
 - b. Equipment repair
 - c. Equipment replacement
 - d. Consumables not directly associated with making prints, i.e., plastic bags for disposal.
 - e. Utilities
 - 5. There was no starting or ending inventory of photo lab supplies.

Charles Renner GSA 13 x21261

Re: lighting increase for Priors office

Please call about meeting.

Oke:

Rotchford and Moose on leave. Mr. Russell of that office, said he will have estimate to Jim Jones this afternoon. I asked him to also send us a copy.

Mary

CABINET ROOM LIGHTING

GSA- Mr. Rotchford

x2213 Pigssoll-

Mr. Moose

x2348 WH

GSA specialists called in by Rotchford/Moose:

Cost estimate to Jim Jones

Mary,

On the lighting in the Cabinet Room--Oke wants to send a letter of thanks to National Geographic for the services of Jack Fletcher. Says to remind him of this.

4 copy to

Grosvenar u/capy

THE WHITE HOUSE WASHINGTON

N.G.S.

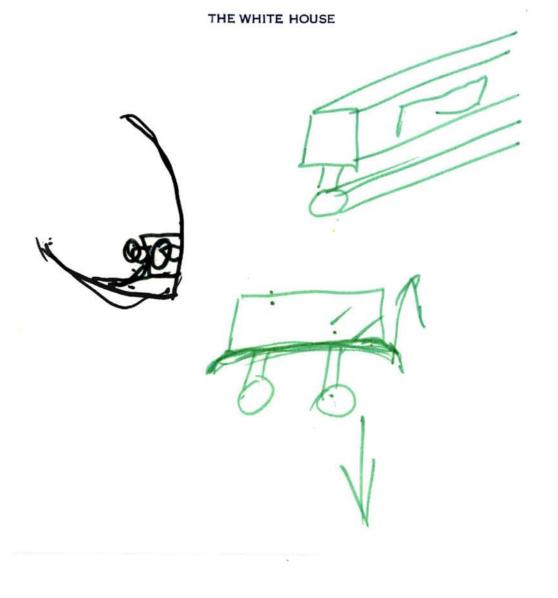
11.6.3.

296-7500

X

THE WHITE HOUSE

doubt take all around. reflective ceiter; (neutral) Change glass squares - greater kick light 128 two set sintale



MEMORANDUM FOR MARVIN WATSON

FROM:

George Christian

The President told Tom Johnson and me yesterday that something must be done about the lighting in the Cabinet Room. The President is not satisfied with the lighting for photographs there, and neither am I.

Would it be possible so explore with the General Services Administration and Okamoto the feasibility of setting up lighting for color similar to that in the President's small sitting room adjoining the Oval Office.

Macbeth Avelite

ce: Okamoto

July 11, 1967

MEMORANDUM FOR CHARLES ROTCHFORD

Get together with Yoichi Okamoto, the President's photographer, to discuss a lighting set up in the Cabinet Room similar to the lighting scheme in the President's sitting room adjoining the oval office. Once you have developed a plan, please let me have a cest entimate before proceeding further.

James R. Jones

JRJ:sas

cc: Okamoto

PHOTO

LAMP

DEPARTMENT

NELA PARK, CLEVELAND, OHIO 44112 . . Area Code 216

August 16, 1965

Mr. Y. Okomoto
The President's Staff
The White House
Washington, D. C.

Better Lighting for Photography - The White House -

Dear Mr. Okomoto:

I have gathered some facts and can propose remedies for some of the difficulties inherent in day in day out photography surrounding the President.

It was a privilege to be included in the group of photographers covering news events and personalities for two working days. Supplementing this experience with tours of the areas involved enabled me to make observations and measurements of lighting levels as well as to learn something of the nature of functions to be photographed.

The prime problems concern monochrome still photography of documentary and historical significance. Other considerations include those of color photography, topical and news pictures, newsreel and informational motion pictures.

The President's television appearances and press conferences make for another special set of considerations involving his appearance, his comfort and optimum seeing conditions for him.

There is the further requirement of taking into account the work of Mr. Joe Scherschel on assignment from the National Geographic Society to make new pictures in color for the publication of the White House Historical Association.

Current practice is to make pictures under existing light without flashes or other direct lighting. On occasion the prevailing white fluorescent lighting in the most photographed areas is supplemented by a roughly equal amount of photoflood light from portable equipment hand held and indirectly aimed.

Lighting is marginal to poor for photography, demanding versatile equipment handled with veteran professional skill and imagination.

Obviously there is much room for improvement both as to the quantity and quality of illumination. Footcandle levels are on the order of 5 \$\overline{\pi}\$ 20. Very low levels are encountered in reception and dining rooms with decorative incandescent lighting from chandeliers and wall fixtures; less than 5 footcandles.

A discussion of possibilities is appended. These range from immediate steps to alleviate pressing problems to major revisions involving all-out re-lighting based on comprehensive engineering studies.

The difficulty with this report lies in where to stop. Even a casual study leads to such profound ramifications of photographic potential that the only feasible approach seems to be that of patient step by step progress and improvement.

My company is willing that I devote all necessary productive time to the satisfactory achievement of our various goals.

Cordially,

D. J. MOHJER

DJM:tjf

cc W. F. Albrecht #281

J. Scherschel, Natl. Geographic

STEPS TO BETTER LIGHTING FOR PHOTOGRAPHY

FORMULA

This problem has two parts. The first thing is simply to get enough light and the second is to get it in the right place. This then can be sub-divided as to permanently installed lighting and portable lighting. Covered, of course, must be the requirements for black and white still photography on all occasions. It is highly desirable that a basic lighting formula meet the need for color photography and ideally, color motion picture photography. If it can do this it will of course be adequate for television as well as color television.

QUANT ITY

Some kind of picture can be made of almost anything that can be seen. It's simply a question of enough expensure time and a wide enough aperture on a fast enough film. If the expensure can be as slow as 1/30th of a second at f/1.4 on fast film processed to ASA 1600, then as little as one foot candle of light will be sufficient for a picture.

Where the prevailing levels of fluorescent illumination run from five to twenty footcandles then exposures on fast film processed to ASA 400, run in the order of 1/30th of a second from f/1.4 to f/2.8. This allows very little leeway for camera movement, subject movement or decent depth of field. 1,000 watts of photoflood Lighting bounced off the ceiling in addition to the existing illumination cam raise footcandle levels to the 15 to 30 zone, allowing the use of stops from f/2 to midway between f/2.8 and f/4 at 1/30th of a second. This is still marginal for good photography. Considering that outdoors in the open shade on a clear day footcandle levels will be in the neighborhood of 1,000 perhaps 1000 footcandles is the ideal upper limit of a formula for enough light for good photography.

A thousand footcandles however are virtually unobtainable indoors except under controlled studio conditions or by the use of flashes.

Complicating the writing of an ideal formula is the fact that steps in the improvement of levels of lighting are geometric.

Increasing the illumination one step from 20 footcandles to 40, for instance, is relatively easy. One step more would call for an increase to 80 footcandles and the next step would be to 160.

The problem in writing the formula them is not so much to set an ideal standard as to set the least possible good workable level of illumination. Basing it on the requirements of motion picture photography, this would be on the order of 200 footcameles of light of the proper color. At this level motion pictures could be made at 24 frames per second on sensitive material rated ASA 50 at an appearance around f/2.

Taking things a step at a time, an immediate goal should reasonably be to obtain 50 footcandles in all the critical areas where photo worthy events take place. Immediately this might be from portable equipment. In most of the areas under consideration it could be achieved with something on the order of 3000 watts of 3200 K to 3400 K light. This much wattage in a portable, relatively small light source, is obtainable with today's quartz iodine lamps. It would require an electric outlet backed up by 25 amps of capacity.

Later then, 3000 to 5000 watts of quartiz iodine illumination could be permanently installed in reflectors, or smealed beam units could be used. Then depending upon the availability of power or wiring it might be installation⁵ upwards of 3000 watts, could be provided in individual rooms. Dimmer switches could be permanently installed, in such rooms as desired.

The reason for dimmer switches is that if the illumination is brought up gradually it is not distracting to the people who are the subjects of photography. Another reason for separate switches is that these should be accessible only to those responsible for photography and the photolevel lighting used only for photographic occasions.

QUALITY

Indirect lighting is suggested for all photographic situations. If the light is bounced off a broad enough area of ceiling, and if the ceilings are of a neutral color, the result is a low contrast but still directional light. Indirect illumination can be even over the entire area of the room so that there will be no fall-off from the principal subject into the background of the picture.

COLOR

This is a problem only for color photography, obviously. To whatever degree fluorescent lighting is mixed in with photographic lighting there will be an excess of blue-green. Roughly equal amounts of 3200 K to 3400 K filament lighting and white fluorescent light intermixed produce an acceptable result on daylight color films. Whites are clean, flesh tones natural. If sufficient 3200 K to 3400 K light is provided, to overpower the fluorescent illumination, then color films balanced for 3200 K or 3400 K would be required. This would be true, for instance, of occasional lighting for television or of lighting up to 200 footcandles in a room where the ambient illumination was only 5 footcandles or less.

Wherever mixtures of lighting are involved color correction will be called for. Where exposures are made on color negative material it is relatively simple to make color corrections in the laboratory. On reversal materials corrections have to be made in the camera by means of filtering. It is almost impossible to stabilize this.

One solution might be to provide universal photo lighting of 5600 K to 6000 K. However where 20 to 30 footcandles of this was mixed with 10 to 20 footcandles of white fluorescent, you would still have a color balance problem. Color temperatures on the order of 6000 K are obtainable from incandescent sources by means of blue filters over the light sources. Therefore some of the total light is filtered out. For example as much as 2000 watts of incandescent filtered to 6000 K might be required to produce the same footcandle level as a thousand watts of 3200 K or 3400 K light. Daylight fluorescent is daylight color visually but not photographically.

PORTABILITY

Quartz iodine sources are small, both as to the lamps and the reflecting equipment are therefore most portable. The umbrella on a boom illuminated by a cluster of four 650 watt quartz iodine lamps as used in the President's Press Conference of July 28th is as good a solution to the problem of practical portable lighting as is available today. With this umbrella overhead at an angle of about 45 degrees and approximately 10 feet from the subject, the footcandle level was on the order of 250. It can't be used on a circuit fused for less than 25 amperes.

The appearance of the lighting unit is not too weird and did not seem to be objectionable to any of the principals involved.

SUBJECT COMFORT

The many factors involved in comfortable lighting require a discussion running into many thousands of words. Comfort is only partly a function of amount of light. As much as 1000 footcandles in the open shade outdoors is quite comfortable to most people. 10,000 footcandles of sunshine is tolerable to many. Comfort among other things is chiefly a function of brightness patterns within the field of view. Excessive contrast

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Another solution is to provide an auditorium especially for functions such as Press Conferences and light it to properly engineered levels. This would call for an architectural and engineering plan.

LIMITATIONS DUE TO SURROUNDINGS

Any fixtures permanently installed will have to blend inconspicuously into the surroundings. They must not under any circumstances call attention to themselves even when lighted, nor destroy the established character of the lighting in the area involved. In some areas light units could be concealed in existing architectural detail. In others, small harmonious construction such as simple shallow valances to conceal

light might be tolerable. In any event all photo lights should be ideally on dimmers so that they could be brought up unobtrusively to photographic levels and reduced again to existing levels without distraction to people in the room.

MISCELLANEOUS

The lighting achieved in the theatre appears to be adequate for its purpose, particularly since there is consciousness of the necessity for eye relief. A 125 footcandle level of illumination appears to be the upper limit of what's available now. This could be increased to perhaps 250 without too much difficulty and this might be desirable, particularly if color motion pictures or color television become involved.

Each area in the building presents its individual problem. Some rooms have relatively high ceilings for their other dimensions. Other rooms are particularly large in view of the low level of illumination. Some rooms have considerably more daylight through windows than others. Strong wall colors prevail in some. Each room will involve an individual engineering study if we establish a goal of raising footcandle levels to something like 50 throughout the building.

If portable temporary illumination achieves the lighting goals we have roughly set here then the step to permanently installed illumination will have been established and should not be too difficult.

One other situation not necessarily involving artificial light is photography in the rose garden. On overcast days there is probably little that could be done to improve it. On days when the sun is shining, however, consideration should be given to the idea of providing a retractable canopy over the area at the steps. Made of neutral translucent material this could be effective in diffusing the light without reducing the level too much. Since the principals involved in any photographic situation in this area would normally be restricted in

movement, if a canopied area were provided for photography, there would be little problem of these people moving out from under the canopy. Even if they did, the situation would not be any worse than it is now. Not only would the lighting contrast be reduced by means of a translucent canopy but the lighting level as compared to direct sunshine would be brought down to something consistent with the exposures available for cameras loaded with fast black and white films without the necessity for neutral density filters.

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* * * * *

DON MOHLER:tjf

August 18, 1965

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