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BULLETIN NO. 29 ON POLICY AND PROCEDURE

"BUDGETING REPAIR, MAINTENANCE, AND REPLACEMENT COSTS"

This Bulletin is being issued to communicate to all local housing authorities the policy of the USHA with respect to budgeting repair, maintenance, and replacement costs and to assist local housing authorities in budgeting such costs in accordance with this policy. The Bulletin contains a description of the various component parts of a project, statements of standards and factors to be used in estimating the costs of repairs, maintenance, and replacement. The classification of RM&R costs used in this Bulletin and the relationship of such costs to other costs is identical with that set forth in the "Manual of Instructions of Accounting Procedure for Local Housing Authorities", particularly part IV thereof. The suggested standards reflect the USHA position that anything short of the maximum amount of tenant help in project upkeep is repugnant to the objectives of the United States Housing Act.

The system of budgeting repairs, maintenance and replacement costs suggested in the Bulletin might be described as the "pay as you go" basis. The reasons for suggesting this basis for budgeting RM&R costs are set forth in some detail in the Bulletin.

A somewhat more detailed statement of the "Scope and Content" of the Bulletin is contained on page 1 of the Bulletin itself. A Table of Contents is also included on the following page. This Table of Contents should be detached from the Bulletin and added as page 21 to the "List and Table of Contents of Bulletins on Policy and Procedure" which was previously issued. This "Covering Page" should also be detached when the Bulletin is placed in your binder with the other Bulletins on Policy and Procedure.

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(Dated December , 1939)

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NOTE: Please detach this and add as Page 21 to the "List and Table of Contents of Bulletins on Policy and Procedure" previously issued.

UNITED STATES HOUSING AUTHORITY  
BULLETIN NO. 29 ON POLICY AND PROCEDURE  
BUDGETING REPAIR, MAINTENANCE AND REPLACEMENT COSTS

SCOPE AND CONTENT.

This Bulletin is designed to assist local housing authorities in budgeting costs of repairs, maintenance, and replacements. More particularly, this Bulletin sets forth, in paragraph I, an explanation of standards and USHA policy for budgeting costs of repairs, maintenance, and replacements, and, in paragraphs II through XI, a description of, and factors for estimating, RM&R costs for grounds; structures; painting and decorating; the plumbing and gas system; the electrical system; the heating system; elevators; ranges; refrigerators; and other equipment.

The classification of RM&R costs, and their relationships to other costs, are set forth in part IV of the "Manual of Instructions of Accounting Procedure for Local Housing Authorities".

I. STANDARDS AND DERIVATION OF FACTORS.

(a) General Standards. In order to estimate the cost of repairs, maintenance and replacements, it is necessary to understand the principles on which they are based and the attitude of the USHA towards management policy which is appropriate for rehousing families of low income who are living under seriously substandard housing conditions. These principles recognize that families requiring substantial federal and local subsidy to obtain decent, safe and sanitary dwellings cannot afford nor should expect any service which the members of the tenant family are well able to perform for themselves. The estimates given in this bulletin reflect the necessity for drastic curtailment of operating budgets in order to promote efficiency and economy and thus achieve the lowest feasible rent to the tenant compatible with low cost to the public. The principles suggested infer that anything short of the maximum amount of tenant help in project upkeep or the slightest tendency towards providing "apartment service" is paternalistic and repugnant to the objectives of the United States Housing Act. Addendum No. 1 to Bulletin No. 16 further describes the underlying philosophy on which this bulletin is based.

A section of the "Management Resolution" to be adopted by the local housing authority should specify the policies and standards to govern various phases of repairs, maintenance and replacements.

In this bulletin appear short descriptions of the standards involved to explain the estimate factors given. Costs computed on the

basis described in this Bulletin are only valid as a reflection of the standards specified and will be most useful during the initial stages of operation. Later local experience will demonstrate necessary adjustments for individual projects. The estimates assume that the local authority has cultivated a sympathetic understanding of the low rental housing program on the part of the labor organizations and municipal departments involved; that the management staff selected is thoroughly qualified and has a high morale and that the tenant relations program has achieved a clear-cut understanding of the maintenance policy by all tenants and has stimulated a high degree of tenant cooperation.

In short, the policies suggested and numerical values given should be accepted as realistic objectives which challenge the ingenuity of the local authority, its tenants, its staff, municipal departments and organized labor.

(b) Repair, Maintenance and Replacement.

(1) Repair means fixing or replacing minor broken parts.

(2) Maintenance is a broader term often including repairs and means keeping an object up to a certain standard of usability or appearance.

(3) Replacement means replacing an object at the end of its useful life with a new object which is to serve the same purpose as the object replaced.

(4) Useful life. The useful life of any object installed or used in a project depends upon the policy followed in repairing and maintaining it. If repairs and maintenance are neglected, early replacement of the object neglected will be necessary. If the object is well maintained and kept in good repair its useful life will be extended. Thus, replacement expense is dependent upon the expense of maintenance and repairs.

(5) One account classification for RM&R. It is generally agreed that no two groups of engineers or accountants will classify the same items of expense uniformly as either repairs or replacements. No practicable definition which would be uniformly interpreted appears possible. Further, USHA-aided housing projects are not operated for profit and thus are not subject to taxation. In the sense that state or federal taxing bodies use the terms, no "net income or surplus" is likely. In consequence there is no need to follow the regulations of taxing bodies with respect to differentiating between repair expense and charges to separate depreciation reserves for replacements.

These reasons account for the policy adopted for USHA-aided projects of combining into one account classification all costs for repairs, maintenance and replacements for any item or group of items.

(6) Variation in RM&R Costs. It is generally recognized that the cost of repairs, maintenance and replacements:

(i) Will vary from year to year, tending to be more constant in the larger projects where the diversity is greater, and

(ii) Will become greater as a project grows older.

(c) Policy for budgeting RM&R Costs.

(1) Possible Alternative Policies. Given the above facts, it would be possible to compute a level charge for RM&R over a 58-year period; such charge being an amount which would (with interest at 2% on reserves on hand) be sufficient to pay all the estimated RM&R costs over a 58-year period. Because of the low RM&R in the early years of a project's life, a very large cash reserve would be built up during such years for use many years thereafter.

On the other hand, the average amount necessary for RM&R over the first 10 years of a project's life might be computed and this amount be included in the cost of operation for such period. Thereafter, the estimated amount for successive periods could be computed and such amount be included in the cost of operation for such periods.

(2) Requirements of the Act. The second course seems the correct one to adopt in view of the specific requirement in the Act that "Annual contributions shall be strictly limited to the amounts and periods necessary, in the determination of the Authority (USHA) to assure the low-rent character of the housing projects involved"

and in view of the further provision that

"the Authority shall reserve the right to reexamine the status of the low-rent-housing project involved at the end of ten years and every five years thereafter; and, at the time of any such reexamination, the Authority (USHA) may make such modification (subject to all the provisions of this section) in the fixed and uniform amounts of subsequent annual contributions payable under such contract as is warranted by changed conditions and as is consistent with maintaining the low-rent character of the housing project involved."

(3) "Pay-as-you-go" basis. The second course also seems preferable because of the fact that operations for the first 10 years will thus be on a "pay-as-you-go" basis and will avoid the building up of the very large cash reserves which would accumulate during this period if a level RM&R over 58 years were contemplated. In view of the fact that it is impossible at this time to accurately predict what conditions will be 10

years hence, it seems unwise to build up such large reserves out of the rents paid by low-income families during the first 10 years.

(4) RM&R during first 10 years. The policy of the USHA will therefore be to include in the cost of operation during the first 10 years the average annual cash cost estimated for RM&R over such 10-year period.

(5) Compensating for additional RM&R costs after first 10 years. Given the continuing changes in our economy, it is impossible to predict at this time the exact situation which will obtain at the end of such 10-year period. Other things being equal, it appears reasonably certain that the RM&R for periods subsequent to the initial 10-year period will be higher because of the aging of the projects. It is, however, quite possible that the rent-paying ability of low-income classes will increase during 10 years and that rents may be raised to compensate for such increased RM&R costs. It is also quite possible that additional economies in other operating costs may be effected which will compensate for the increased RM&R costs subsequent to the initial 10 years.

If these last two factors do not suffice to compensate for the increased RM&R after the initial 10 years, it will be necessary at that time to increase the USHA annual contribution by an amount necessary to compensate for all or part of the increased RM&R. In order that it may be possible 10 years hence to so increase the rate of USHA annual contributions, the rate of annual contributions for the first 10 years must be set at an amount below the legal maximum equal to at least the expected difference between the average annual cost of RM&R in the initial 10 years and the average annual cost of RM&R in the subsequent 48 years.

In effecting this policy, a computation must therefore be made of the expected average annual amount of RM&R in the first 10 years and the additional average annual amount of RM&R required for the succeeding 48 years.

(6) Definition of two factors used in estimating. Two factors are, therefore, given for estimating the cost of repairs, maintenance and replacements for the various component parts of a project, with the exception of Painting and Decorating, and "other equipment", i.e. factors representing:

(i) The average annual cost for the first 10 years of operation, which is the average of the cash disbursements for RM&R over the first 10 years. This is designated hereinafter as the "10 Year Average Annual RM&R Cost".

(ii) The additional amount to be added to the 10 Year Average Annual Cost to determine the average annual RM&R cost for the remaining 48 years of operation that is contemplated by the amortization period of the bond issue. This is designated hereinafter as the "Additional Average Annual RM&R Cost".

(d) 10 Year Average Annual Cost. Factors (expressed in decimal ratios of development cost) for computing cost have been prepared by the USHA, in the following manner:

(1) Maintenance and repair costs. The maintenance and repair policy and resultant costs for several typical systems or installations were predicted for the first 10-year period of operation.

(2) Replacement costs. The useful life of the various components of each typical system or installation was forecast based upon the predicted policy and expense for maintenance and repairs. The amount of failures and costs of replacements during the 10-year period were forecast for all items regardless of the estimated useful life of the item, since it is recognized that for a given number of objects said to have an average useful life of 15 years, for example a certain number will fail and require replacement before the 15-year period which will be balanced by the number which last beyond 15 years.

(3) Total RM&R costs averaged. The total costs thus estimated for the various systems were divided by ten to arrive at the 10 Year Average Annual RM&R Cost. Such Cost was then divided by the average development cost for the typical systems or installations to arrive at an average factor which is a decimal ratio of the development cost for the system or installation.

It is expected that costs experienced for the first part of the 10-year period will be less, and during the last part will be more than the average annual rate. Thus reserves for RM&R should be established to provide for the higher costs later in the 10-year period. As the time interval is relatively short no interest earnings on the reserves were forecast in developing the factors.

While it is expected that the actual RM&R costs experienced on certain systems or installations in a project will over-run the estimates which are computed from average factors, it is also expected that the actual costs on other systems or installations in the same project will under-run the estimates. The over- and under-runs in a project will tend to equalize each other so that the sum total of the 10 Year Average Annual RM&R Costs for one well managed project should be reasonably close to the sum total of such costs on a similar project equally well managed.

It is, moreover, recognized that estimates now made for the 10-year period cannot be entirely accurate even over this limited term of years. It is, therefore, anticipated that as experience develops on each particular project, necessary revisions will be made from time to time in the average annual amounts set up for the first 10-year period.

(e) Additional Average Annual Costs. Assuming that present economic conditions will continue, the average annual costs of RM&R for the 48 years following the first 10 years are expected to be substantially higher than the 10 Year Average Annual RM&R Costs. The actual annual costs immediately following the tenth year are expected to be less than the 48-year average. Moreover, they are expected to increase gradually thereafter. A cash reserve would thus be built up in the early part of the 48-year period. Because of the long period of time involved interest earnings at 2% have been anticipated in estimating the average annual cost of RM&R for typical systems during the 48-year period. With this exception the method used in estimating the average annual costs for the 48-year period is similar to that described for the 10 Year Average Annual RM&R Costs.

To determine the Additional Average Annual RM&R Cost for a typical system the amount of the estimated 10 Year Average Annual Cost for such system was subtracted from the amount of the estimated average annual amount which, with interest earned at 2% on reserves on hand, should be set aside during the 48-year period to provide for the cash disbursements for RM&R during such period.

The Additional Average Annual Cost for a typical system thus computed was divided by the development cost of such system to establish the decimal factor for the Additional Average Annual Cost.

(f) Standards of Appearance. As stated before, the budgeted amount for repairs, maintenance and replacements, depends upon the accepted standard of usability and appearance. The property should always be kept in usable shape and steps taken to preserve the structures and equipment from undue deterioration. It is contemplated that good management will be exercised and that the old adage, "A stitch in time saves nine", will be followed.

Standards of appearance are hard to set. The tenants of low rental housing cannot afford, nor should subsidy be increased, to pay the costs required to keep the place as "spick and span" as in higher rental properties. On the other hand, inasmuch as the housing projects are made of the same materials, - brick, concrete, plaster, wood, glass, and paint - as the slums which were cleared away, it would be entirely possible for any project to obtain the appearance of a slum in a short time. Despite the fact that the standard of appearance appropriate for low rent housing is hard to set, especially on paper, it is a very important standard.



The standard may be set by permitting the project management to curtail maintenance and allow the scale of appearance to become a little too low for a short time until an agreement can be reached, that the project is to be maintained at a higher standard. There seems to be no other way now known to assure the project management that economy in maintenance affecting appearance has reached the proper minima. The following estimate factors contemplate operating very close to the lower limit of acceptability.

## II. GROUNDS.

The care of all ground areas either planted or paved, classified as repair, maintenance and replacement, does not include the removal of snow or trash, which is included in Operating Services. The estimate of costs for repairs, maintenance and replacements of grounds therefore includes all labor, supplies, materials and equipment required for planted areas, for surfaced areas, and for yard appurtenances.

(a) Planted Areas. The degree of maintenance of landscaped areas will depend upon the appearance standard which is adopted. This will vary with different types of areas. In keeping with the general standards for RM&R, the ultimate objective should be tenant maintenance of all planted areas. The planning of some projects militates against the complete achievement of this objective. For this reason planted areas are divided into two classes for budgeting purposes, i.e. project maintained and tenant maintained.

### (1) Project Maintained Planted Areas.

(i) Primary Project Areas. These areas, which are similar to "front or side yard" areas, but not necessarily adjacent to dwellings, should be kept at a relatively high level of appearance.

(ii) Secondary Project Areas. These areas may be considered insofar as the degree of maintenance is concerned as "back yard areas". They are not necessarily back of any building or adjacent to a dwelling. While their appearance should always be neat and orderly, the kind of planting and the care given them will be at a lower level than that for primary areas.

(iii) Play Field Turf. Play fields requiring turf maintained for active recreation would be cut by scythes or other field equipment.

(iv) Recreation Areas - Naturalistic. These areas include wooded or field areas used as parks for passive

recreation and require care only for the normal care of the trees and the removal of the undesirable growth.

(v) Undeveloped Areas. Land purchased for future development should be maintained only to the degree necessary to prevent the areas from being unsightly and hazardous.

(2) Tenant Maintained Planted Areas.

(i) Tenant Front and Side Yards are planted areas usually at the front and ends of buildings, the maintenance of which can be assigned to the tenant. These areas are comparable to Primary Project Areas, the only difference being that the ordinary maintenance functions are performed by the tenant.

(ii) Tenant Back Yards are areas of lesser importance adjacent to the dwelling, the maintenance of which can be assigned to the tenant.

(iii) Allotment Gardens are additional areas set aside for gardening by tenants. These garden areas will require an occasional clearing by the project maintenance force and a certain amount of management supervision.

(b) Surfaced Areas. Surfaced areas may be divided between hard surfaces and water-bound surfaces. These areas include walks, drives, spray pools, play and other recreation areas, laundry yards, trash platforms, etc.

(1) Hard Surfaced areas include those finished with masonry, concrete and bituminous materials.

(2) Water-bound surfaces include clay and gravel combinations and macadam.

(c) Yard Appurtenances. Yard appurtenances include fences, clothes posts, benches, and guard rails.

(d) Correction for Labor Rates. The following tabulation gives the average unit costs for the above classifications of planted areas based on a 35¢ per hour labor rate. If the actual rate for unskilled laborers (after making allowances, if any, for paid time on vacations or on sickness) differs from 35¢ per hour, the labor costs indicated in this tabulation should be corrected in direct proportion. In such cases, it is suggested that the estimates for grounds be worked up to totals for labor and equipment based on the 35¢ rate. Then the total labor for grounds can be corrected for the local rate and added to the material costs giving a corrected total grounds cost.

(e) Estimated Unit Costs of Items of Ground Maintenance.

ITEM	10 Year Average Annual Cost per 1,000 Square Feet			Additional Average Annual Cost
	Labor	Materials	Total	
<u>Lawn and Planted Areas</u>				
Primary Project-				
2 Stories or less	\$7.87	\$3.19	\$11.06	
3 Stories or more	9.80	5.00	14.80	
Secondary Project	3.92	1.60	5.52	SEE
Play Field Turf	1.40	.87	2.27	NOTE
Recreation Areas-Naturalistic	.70	.50	1.20	BELOW
Undeveloped Areas	.28	.10	.38	
Tenant Front & Side Yards	.70	3.44	4.14	
Tenant Back Yards	.70	.55	1.25	
Allotment Gardens	.42	.20	.62	

NOTE: Since the costs of these items are not based on the development cost the "Additional Average Annual Cost" is obtained by multiplying the total cost for materials only by 0.21. The labor cost is not to be increased in such computation.

ITEM	10 Year Average Annual Cost	Additional Average Annual Cost
Hard Surfaced Areas	.0112	.029
Water-bound Surfaced Areas	.0410	.029
Yard Appurtenances	.0075	.039

### III. STRUCTURES.

(a) Description. Under the subject of Structures is included the repair, maintenance and replacement of roofing and sheet metal; masonry, caulking and waterproofing; tile setting, lathing and plastering; carpentry (including wood and asphalt tile floors), hardware, glazing and screens; and sundry items including incinerator structures, ironwork, etc. It does not include painting or decorative coverings.

(b) Standard of RM&R. The standard for maintenance of structures should be based upon both utility and appearance. The roofing, exterior walls and caulking should be kept weathertight to prevent damage by water to structure and decoration. Painting and decorating costs can be materially increased by such water damage. The standard of maintenance and replacement of carpentry work including floors should be in keeping with the discussion on general standards. Screens should be kept in a good state of repair in order to be at all effective.

(c) Estimate factors. The 10 Year Average Annual RM&R Cost for structures may be estimated at .0021 times the total development cost of all of the structure, including floor coverings (linoleum, asphalt tile, etc.) and the building foundations.

The Additional Average Annual RM&R Cost is estimated at .0027 times the total development cost of the structure.

### IV. PAINTING AND DECORATING.

(a) Description. Painting and decorating includes all exterior and interior painting, also the project labor and material for washing painted surfaces, plaster patching, floor refinishing, and for the repair and replacement of shades and curtain rods.

(b) Standards. Paint is applied to protect the surface and to affect the appearance. Color has little bearing on the protective qualities, but has a large bearing on appearance. The color scheme of a project should be simplified so that the number of colors to use will be reduced to a minimum. Keeping in mind that atmospheric dirt in some localities will darken painted surfaces, colors should be chosen for exterior work which will give pleasing results for the useful life of the paint. The replacement of exterior paint should only be done when it no longer protects the painted surface. The replacement of interior paint will normally be made to improve appearance before it will be necessary to protect the surface by painting.

(c) No Additional Average Annual RM&R Cost. Costs of painting and decorating are estimated to be the same for the first 10 years and

for the following 48 years. Thus the figures given below reflect both the 10 Year Average Annual Cost and the average annual cost thereafter. There will be no Additional Average Annual Cost.

(d) Exterior Painting.

(1) Estimate factors. A good grade of paint should always be used. Even the best paints will give protection for varying lengths of time, depending upon the climatic conditions. The experience of the locality should be reflected in the painting cycle noted in the Management Resolution. The following figures give an average cost of repainting the various items noted, based on paint costing \$1.75 per gallon and a labor rate of 75¢ per hour:

Steel frames and sash	\$9.38 per hundred sq. ft. of masonry openings
Wood frame sash (Av.-3'6" x 5'6")	.60 per window, consist- ing of 2 sash
Screens for wood sash	.22 per window
Exterior doors (paint one side), frame and all wood of screen door	1.10 per opening
Outside blinds (plain)	.99 per window
Metal hand rails attached to buildings	1.10 per 100 linear feet
Outside trim (eaves, porches, gable ends, etc.)	1.49 per 100 sq. ft.

(2) Correction for different paint and labor costs. If paint and labor unit costs are different than those on which the above were based, the following formula may be used to obtain a revised estimate for exterior painting:

$$T = (0.104P + 0.00545L + 0.41)t$$

T = the revised estimated total cost for exterior painting

P = the cost of paint in dollars per gallon

L = the actual cost of labor in cents per hour correcting if necessary for sick and annual leave with pay.

t = the total cost for exterior paint obtained from using the factors above noted.

(e) Interior Paint and Decoration

(1) Description. This item includes minor repairs to walls, ceilings and trim to prepare the surface for repainting; painting of walls, ceiling and trim; waxing, oiling and refinishing of floor surfaces and the repair and replacement of shades and curtain rods. The estimates are divided between dwelling spaces and project and commercial space.

(2) Dwelling Spaces.

(i) Walls, Ceilings and Trim. In general, interior painting will be replaced for the sake of appearance before it will be necessary to replace it to protect the surfaces. The time to replace it is therefore more difficult to define because it requires the striking of a balance between what the public should pay in subsidy, what the tenant can pay in his rents, and what should be done for the welfare of the tenant. A repainting schedule should be defined in the Management Resolution and used in making estimates for operating costs. There are several operations involved in the care of painted surfaces; the removal of dirt from the surface, the filling of cracks, minor patching of plaster, etc., and the application of the paint material.

In low rent housing, it is proper to expect the tenant to remove the dirt from the walls, ceilings and trim. The filling of cracks and other minor repairs should be done by the project maintenance crew. The application of paint materials to walls and ceilings may in many localities be done by the tenant. The saving which can be made in rents or subsidy by having the tenant assume responsibility for this labor is in the neighborhood of \$0.40 per month for a 4-room apartment.

The application of paint, stain, wax, or similar materials to the trim of a room might be done by the tenant; but at this time, it is not thought advisable to have him do it. The skill required and the chance that the work will have to be done as a protective measure are such as to make it desirable in most cases to have the work done by the project maintenance crew.

The project should furnish all materials and tools for interior painting and decorating, except those required for washing. The latter include soap, pails, sponges, etc., which should generally be supplied by the tenant.

(ii) Floors. The tenants are expected to keep the floors clean. The project costs for floors indicated in

the following tabulation include the refinishing only. This consists of supplying waxes or paints and removing the accumulated materials about every 5 years. The replacement of floors is included under the item of Structures.

(iii) Shades and Curtain Rods. The figures in the tabulation for shades contemplate washing the shades after about 3 years and replacing them in 5 years for steel sash and 8 years for wood sash. The figures for curtain rods include repairs and replacements.

(iv) Estimate factors. In the following tabulation, figures are given which can be used to estimate the cost of interior painting and decorating. The figures are given for different kinds of rooms, so it is necessary to know the total number of each kind of room in the project. For walls and ceilings the figures are for one job of painting involving one coat of paint. If, for instance, the walls and ceilings are repainted on a 4-year schedule, the totals obtained from the chart for walls and ceilings must be divided by 4 to obtain the annual cost of painting them. If painting is done to any appreciable extent as a result of tenant turnover, then the painting schedule may be greatly altered. The formula for this is very complex and includes certain compensating factors which effect the annual costs. The net result approximates the painting costs obtained from figuring a painting schedule without regard to turnover.

The figures given in the table are for both project and tenant application of paints. In the latter case, the figures represent the costs to the project for materials and for a small amount of labor supplied by the project to instruct tenants. They do not include any payment to the tenant for work which he does. The other costs in the table are figured on an annual basis. They are figured for a 75¢ per hour labor rate and material costs corresponding to a good grade of material.

If labor rates are other than 75¢ per hour, then the total cost for Interior Painting and Decorating should be corrected in accordance with the following formula:

$$T = (0.67 + \frac{L}{225})t$$

T = Revised total cost to be computed

t = Total cost obtained from the tabulation

L = Total rate in cents per hour

INTERIOR PAINTING AND DECORATING COSTS

Type of Room	COST FOR WALLS AND CEILINGS PER APPLICATION				ANNUAL COST						
	Oil Paint		Casein or Calcimine		Trim	Refinishing Floors			Shades		Curtain Rods
	Applied by Project	Applied by Tenant	Applied by Project	Applied by Tenant		Wood	Linoleum Asphalt Tile	Unpainted Concrete	On Steel Sash	On Wood Sash	
Kitchen	\$5.34	\$2.46			\$0.87	\$0.53	\$0.26	\$0.05	\$0.26	\$0.17	\$0.066
Bath	3.24	1.53			.33	.19	.10	.01	.18	.11	.042
Living	6.82	2.64	\$5.76	\$1.82	.83	.98	.49	.10	.60	.40	.066
Bedroom	5.72	2.11	4.88	1.49	.68	.68	.32	.05	.46	.30	.066
Hall	2.94	1.15	2.49	.79		.31	.16	.01			
Stair	1.91	.72	1.58	.50	.27	.19	.10	.01			
Closet	.87	.26	.72	.22	.19	.04	.03	0			



(3) Project and Commercial Space. Interior painting and decorating costs for the project public spaces, heating plants service, and commercial spaces, exclusive of project stair halls, will average about 5% of the interior painting and decorating costs of the dwelling units. The painting cost per stair hall per story will average about \$1.60 for halls with glazed tile and \$3.30 for halls with painted walls per year. The unit "stair hall per story" includes one landing and the stair from one story to the next.

#### V. PLUMBING AND GAS SYSTEM.

(a) Description. The repair, maintenance and replacement of the plumbing and gas systems includes all labor, material and supplies for the hot and cold water systems, including lines, tanks, meters, generators, pumps, motors and controls; drainage and sewerage systems; and for plumbing fixtures, including medicine cabinets; gas piping, valves and meters.

(b) Standards. All of this equipment should be kept in usable condition. The question of appearance, except that which is included under the item of Painting and Decorating, rarely enters into the repair, maintenance and replacement of these items.

(c) Estimate Factors. In estimating the repair, maintenance and replacement for the plumbing and gas systems, the total development cost is used as a basis. This appears feasible because the type of equipment and quality of workmanship which are acceptable for low rent housing constructed to last 60 years are of a fairly uniform grade.

The annual repair, maintenance and replacement costs will vary for different sized projects and may be estimated by using the following factors of the total development cost for the plumbing and gas systems:

Number of Dwelling Units in Project	10 Yr. Aver. Annual Cost	Add. Aver. Annual Cost
50 to 299 dwelling units	.0098	.0214
300 to 499 dwelling units	.0089	.0200
500 or more dwelling units	.0078	.0171

#### VI. ELECTRICAL SYSTEM.

(a) Description. The electrical system consists of the exterior distribution, including yard lighting standards and underground telephone ducts; and the interior wiring including meters, fixtures, lamps and fuses. The costs for repairs, maintenance and replacements include

all labor, materials and supplies for these items. The repair, maintenance and replacement costs for electric motors and their starting equipment are not included with the electrical system, but with the equipment which the motor drives.

(b) Standards. The standard of maintenance for the electrical system is determined by the service required rather than from the point of view of appearance. Where cooking and heating plant equipment is dependent upon the continuity of the electric supply, it is important that the maintenance of the electrical system be at a relatively high standard. Fortunately, electrical equipment, if it is not abused, will operate satisfactorily with a small amount of maintenance cost.

(c) Estimate factors. The repair, maintenance and replacement costs for the electrical system may be estimated by the development cost of the part of the system by the following factors:

Part of System	10 Yr. Aver. Annual Cost	Add. Aver.. Annual Cost
Exterior - Overhead	.0067	.0384
Underground	.0046	.0289
Interior -	.0118	.0120

#### VII. HEATING SYSTEM.

(a) Description. The repair, maintenance and replacement of the Heating System includes all labor, material and supplies used for the upkeep of the heating plant including boilers, firing equipment, heating stoves and furnaces, fans and pumps; the distribution system including distributing mains, pipes and ducts, steam meters and automatic controls; and radiation including radiators, radiator valves, traps and grills.

(b) Standards. The standard of maintenance will depend upon the service required from the equipment rather than upon its appearance. During cold weather, it is essential that heating service be maintained, particularly if damage from freezing of water lines is possible. In many installations tenants can be kept warm but not necessarily comfortable by the cooking equipment. This makes it possible to have interruptions to the heating plant, which fact will influence the necessity for certain types of maintenance work.

Where the fuel cost is an important item of expense, the necessity for efficient operation exists. In general, the more expensive the fuel the more important is the item of efficiency. It costs money to maintain high efficiency. Some of this cost is reflected in the repair, maintenance and replacement expense and it is a matter of good heating plant management to determine the proper standard of maintenance from an efficiency point of view.

Appearance should not be a controlling factor in this maintenance work. This statement however, should not be interpreted to encourage slovenly and careless appearance around the plant. A good heating plant operator takes pride in his surroundings and some money spent to satisfy this pride is a good investment. A plant that is dark and dingy is rarely efficiently operated. A little cleaning material and paint given to the operator to be applied by him during spare moments will go a long way.

(c) Estimate Factors. The annual cost for repair, maintenance and replacement may be estimated by multiplying the development cost of the heating system by the following factors:

Type of Heating System	10 Yr. Aver. Annual Cost	Add. Aver. Annual Cost
Central High Pressure System	.0258	.0208
Central Low Pressure System	.0257	.0221
Group Low Pressure System or Hot Water	.0266	.0222
Heating with Purchased Steam	.0184	.0104
Hot Air Furnaces	.031	.023
Tenant Operated Hot Water Plants	.025	.012
Tenant Operated Steam Plants	.030	.012
Tenant Operated Stoves and Circulators	.039	.007
Tenant Operated Gas Heaters	.061	.023

#### VIII. ELEVATORS.

(a) Description. The use of elevators in low rent housing is rare except where land costs are extremely high. There is a wide variety of elevator equipment with varying degrees of automatic control. It is therefore not deemed necessary to cover this subject in a comprehensive way in this bulletin. Estimating the annual costs for the repair, maintenance and replacement of elevators should be treated as a special problem for each project where it arises.

(b) Estimate Factors. As a very rough approximation the 10 Year Average Annual RM&R Cost will approximate .055 of the development cost of the elevators. The Additional Average Annual RM&R Cost will approximate .042 of the development cost.

#### IX. RANGES.

(a) Description. This item includes all repair, maintenance and replacement of stoves or ranges used in whole or in part for cooking.

(b) Standards. The standard of maintenance should be very largely limited to that required to keep the equipment in usable condition. In view of the low rents and reduction in subsidy which must be obtained, all of the cleaning of ranges should be expected to be done by the tenant. If the outgoing tenant has not cleaned the range to the satisfaction of the incoming tenant, then the latter should complete the cleaning.

(c) Estimate Factors. The annual repair, maintenance and replacement costs may be estimated at the following factors of the development costs:

Type of Range	10 Yr. Aver. Annual Cost	Add. Aver. Annual Cost
Electric	.068	.055
Gas	.061	.055
Oil	.066	.051
Coal	.062	.055

#### X. REFRIGERATORS.

(a) Description and Standards. The repair, maintenance and replacement costs for refrigerators include all labor and materials required to keep them in operative condition.

If the refrigerators are project owned, the standard of maintenance should be the same as that outlined for ranges. If the refrigerators are tenant owned, there should be no added cost to the project for the maintenance of them. It may prove less expensive for the tenant to have the project do certain maintenance work for him and bill him the actual cost of this service. If this is done, the cost of this work should be included in the estimate for refrigerator repair, maintenance and replacement, and a like amount included in the budget estimate for Other Income.

(b) Estimate Factors. The annual allowance for the repair, maintenance and replacement of refrigerators may be estimated by multiplying the development cost of the refrigerator by the following factors:

Type of Refrigerator	10 Yr. Aver. Annual Cost	Add. Aver. Annual Cost
Electric	.064	.053
Gas	.058	.052
Oil	.052	.052
Ice	.098	.040

## XI. OTHER EQUIPMENT.

(a) Description. In this group is included electric laundry hot plates, electric hot water heaters; shop equipment, tools and supplies; operating service equipment; social, recreational and playground equipment; office equipment; and sundry including electric hot water heaters.

(b) Standards. The standard of maintenance of these items should primarily be to keep them in usable shape with the exception of the social and office equipment which, in addition, should be maintained to have a neat appearance.

(c) Electric Hot Plates. Laundry service, such as boiling clothes and fixing starch, is hard on electric hot plates. The average annual FM&R costs will approximate 0.24 of the development cost of the hot plates. There will be no Additional Average Annual FM&R Cost. Gas hot plates are usually furnished under the plumbing contract, so the repair, maintenance and replacement for gas plates is included in the Plumbing and Gas System estimate.

(d) Shop Equipment. The average annual allowance for the repair, maintenance and replacement of shop equipment may be estimated from the following tabulation:

Dwelling Unit	Aver. Annual FM&R Costs
Less than 300 Dwelling Units	\$0.64
300 to 999 Dwelling Units	0.47
1,000 and over Dwelling Units	0.30

There will be no Additional Average Annual FM&R Cost.

(e) Operating Service Equipment. With the exception of garbage cans and trash cans and baskets, the operating service equipment can be classified with janitorial supplies, which item is estimated under Operating Services.

The maintenance and replacement costs of project owned garbage cans will amount to 50¢ per year per family using them. This is based on cans of sufficient number and size for garbage collections twice a week.

The maintenance and replacement costs of project owned cans will amount to 31¢ per year per family using them. This is based on collections twice a week. If collections are made once a week, double the can cost should be provided.

Public trash baskets. On the basis of \$6 baskets being cleaned, repaired and painted annually, and lasting 6 years, the cost per basket will be \$1.60 per year.

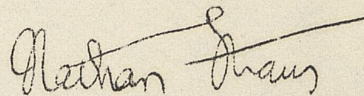
There will be no Additional Average Annual RM&R Costs for Operating Service Equipment.

(f) Social, Recreational and Playground Equipment. It is a policy of the USHA to urge local authorities to obtain from other agencies insofar as possible the recreational facilities necessary for the project tenants. The Management Program should indicate what facilities of this nature are maintained by the city. The annual project cost for the repair, maintenance and replacement of the facilities which the city does not provide may be estimated by allowing .075 of the development cost of the equipment purchased for the project.

There will be no Additional Average Annual RM&R Costs for Social, Recreational and Playground Equipment.

(g) Office Equipment. The annual cost of the repair, maintenance and replacement of office equipment may be estimated at 10% of the development cost of that equipment. There will be no Additional Average Annual RM&R Costs.

(h) Electric Hot Water Heaters. The 10 Year Average Annual RM&R Cost for these heaters will be .033 of the development cost. The Additional Average Annual RM&R Cost will be .046 of the development cost.



NATHAN STRAUS  
Administrator

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