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NATIONAL RESEARCH COUNCIL  
CANADA  
DIVISION OF BUILDING RESEARCH

PAINT PERFORMANCE ON HOUSES IN AMHERST, N.S.

by

D.C. Tibbetts

ANALYZED

Internal Report No. 327  
of the  
Division of Building Research

Ottawa  
May 1966

## PREFACE

The performance of exterior paints is a topic of major concern to building research agencies around the world. This is a reflection of the very demanding service required of paints in general. Extremely thin films, formed in situ following liquid application to various surfaces under a range of conditions, are required to develop and maintain certain necessary properties while subjected to the environmental influences of the substrate and the weather. Since the chemical and physical effects involved are very complex and cannot always be predicted, well documented observations of paint performance in the field can be very useful.

Observations made on a group of houses at Amherst, before and after repainting are now reported. The author is officer-in-charge of the Atlantic Regional Station of the Division

Ottawa  
May 1966

N.B. Hutcheon  
Assistant Director

# PAINT PERFORMANCE ON HOUSES IN AMHERST, N.S.

by

D.C. Tibbetts

Paint failure by peeling on wood sidings in the Atlantic Provinces is of particular concern to the Division's Atlantic Regional Station as a large percentage of houses in the region are traditionally clad with either wood shingles or bevelled wood sidings. In general, it can be noted that peeling problems are more commonly related to the latter.

Literature surveys indicate that the peeling phenomenon is not thoroughly understood. There appears to be common agreement among the acknowledged experts in paint technology that moisture is a prime cause of such failure; but agreement as to the source of moisture whether by condensation or weathering, or both, is not so well defined. Suggestions have been advanced as to causes and cures, and in spite of the promulgation of such information in commonly available trade literature, the problem persists. Paint peeling from wood sidings, particularly bevelled sidings, still occurs, and the public reaction is partly reflected by the increasing use of substitute materials for painted wood sidings.

It is generally accepted that important advances have been made in paint technology in recent years; reportedly, paints are, consistent with economics, "better than ever". It is thought, however, that observations of paint performance in the field might contribute toward an explanation of the paint peeling phenomenon.

## REGIONAL INTEREST

The Station's active "field" interest in paint performance began with a request from the Regional Office of Central Mortgage and Housing to examine a group of rental units in Amherst, Nova Scotia. Paint had consistently peeled from the wood sidings and trim of these houses since their construction. The initial examination was made 14 and 15 August 1957. A condition report assembled following this visit is included as Appendix I to this report. These houses were repainted during the summer of 1958.

In the spring of 1961, 278 houses in Nova Scotia and New Brunswick, including the Amherst group, were examined and a report was prepared on existing conditions. This report, in effect, is contained in the specifications for the 1961 repainting program

and is included as Appendix II to this report. Requirements for surface preparation and repainting are also cited in Appendix II. As these recommendations were subsequently only applied to the Amherst group, it was thought useful to present a paint-performance history of these houses from the time of construction to the time of a condition study made 12 March 1964.

## HISTORY AND DESCRIPTION

This group of 35 houses was built in 1948-49 on a sloping site facing south in the southeast part of the Town of Amherst, N.S. Seven houses were built on the north side of Spring Street which runs approximately east and west; the remaining 28 were built on the east and west sides of Westminster Avenue which runs approximately north and south (Figure 1). Of the 35 houses, 7 are bungalows and 28 are  $1\frac{1}{2}$  storeys.

### Foundations

All houses have basements nearly all of which are reported to be damp for several months each year -- a few are continuously damp. There may be some significance in the fact that most of the first 8 houses purchased by the tenants are located near the top of the slope on Westminster Avenue where basements are relatively dry due to better drainage.

### Heating

Originally all the houses were heated by gravity warm-air furnaces hand-fired with coal, but some heating units have since been converted to oil by the tenants. Hot water jacket heaters were provided in the basements. Chimneys are inside to the roof line.

### Exterior Cladding

Thirteen houses are clad with asbestos side wall shingles to the eave line with vertically-applied Vee-jointed wood siding on the gable ends with wood soffits and trim. There are four bungalows in this group (Figure 2). Thirteen houses have bevelled wood siding on all wall surfaces and of this number, three are bungalows (Figure 3). Nine houses have asbestos shingles on side walls and gables and have wood soffits and trim (Figure 4).

### Roofs

All houses in the group have asphalt roof shingles.

### Interior Cladding

Gypsum wallboard was used throughout the project.

### Insulation

Insulation consists of eel-grass quilted batts with no evidence of a separate vapour barrier. Insulation follows the rafters from the eaves in  $1\frac{1}{2}$ -storey houses, but it is not known whether this continues to the ridge or across the upstairs ceilings as no access hatches were provided to spaces above the ceilings. Doors in dwarf walls in  $1\frac{1}{2}$ -storey houses provide access to under-the-eave areas. The backs of these doors are uninsulated. A floor is provided over a small area of this space for storage purposes. Bungalows have attic access hatches, and insulation batts were installed between the ceiling joists. Hatch covers are uninsulated.

### Ventilation

All houses have one 8- by 10-in. screened eave vent in each soffit. The  $1\frac{1}{2}$ -storey houses have a screened vent about 2 by 24 in. at the peak in each gable. Bungalows have a louvred vent about 8 by 12 in. at the peak in each gable.

Some general observations and suggested corrective measures relative to construction details and materials as the result of the August 1957 survey are contained in Appendix I.

### PAINTING SEQUENCES

These houses have been repainted every three years following their construction. Failure by peeling has been persistent. At the time of the first visit by the writer in August 1957, 8 of the 35 houses had been sold to tenants. All houses, however, were examined and found in the condition cited in Appendix I. Recommendations for corrective measures as prerequisite to further painting were made and it was suggested that a few of the 27 unsold houses to be repainted receive special and detailed attention by a contractor of the Corporation's choosing. Three of the houses (114 and 116 Spring Street and 15 Westminster Avenue) were subsequently chosen for this purpose.

On 22 September 1958, the houses that had been repainted that summer were visited with Mr. H. Ashton of the Division's Paint Group and the contractor responsible for changes to and re-painting of the three houses previously selected for special attention. Correspondence related to this visit contains the following comments:

"Generally speaking the repairs to and preparation of the siding for painting by Mr. X were a necessary prerequisite for a good paint job as is evidenced by the better appearance, even at this early date, of the three units done by him as compared to the others. An interesting aspect of Mr. X's work was that one complete wall was stripped and re-covered with new back-primed cedar siding. At the time of this visit there were no blisters or other failures evident. The other houses done by separate contract (the tender system) show more blistering and this is attributed to the difficulty in removing other than loose paint from the original finish. Most blistering occurs over existing paint films that may, on cleaning the surface for painting, have appeared to be well adhered to the wood. The difference between the two groups of houses is not in the quality of the paint but in the surface preparation. Both series of houses tend to demonstrate that once the adhesion of the first paint system has been damaged, even though some areas have not blistered, the first coats will adhere better to a new coat of paint than to the wood."

On 13 September 1960, the houses were examined with Mr. J. Harris of the Division's Paint Group. All wood-clad houses, with the exception of trim in most cases, were in need of scraping and repainting. Examples of peeling included the three houses painted in 1958 by Mr. X. The wall of one of these three houses reclad with back-primed cedar showed no evidence of failure. Peeling in most instances was not as extensive as when the houses were examined in August 1957, although it was evident that extensive surface preparation would be required prior to repainting.

On 19 April 1961, a detailed study of the houses was made to determine their condition in advance of preparing specifications

for the repainting proposed for the fall of that year. The specifications, cited as Appendix II to this report, indicate the condition of the houses and reflect the surface preparation considered necessary for each wall of every house to be repainted.

By the time painting was to start in the fall of 1961, the number of houses still owned by C.M.H.C. was reduced to 21, and it is this group of houses with which this report is concerned. Of these 21 houses repainted by C.M.H.C., 10 were entirely clad on the exterior with bevelled wood siding (CL), 6 were a combination of asbestos-cement shingles to the eave line with the gable ends clad in vertical wood Vee-jointed siding (CO), and 5 were entirely clad on the outside with asbestos-cement shingles.

A visit on 2 October 1961 revealed that the siding was being prepared for painting. Members of C.M.H.C. inspected the site on 6 October 1961 and reported that the contractor was still burning, scraping, sanding, and washing but 11 units were ready for the first coat of paint. Inspection by the writer indicated that the contractor had done a thorough job of surface preparation in accordance with the specifications and confirms that all painting took place following 6 October.

A brief inspection on 15 November 1961 indicated that painting was completed and that there were no defects apparent at that time.

On 21 August 1962, at the request of C.M.H.C., an examination was made of the house at 15 Westminster Avenue. This house reportedly blistered before the painters left the project in 1961 and was repainted at that time. At the time of this visit some small blisters had occurred on south and north exposures (gable sides with no roof overhang) and slight blistering was general over unremoved old paint. Wide roof overhangs appeared to have provided protection for the other two exposures. It was noted that the back-primed siding applied to the west side of this house by Mr. X in 1958 was still in excellent condition.

On 21 August 1963, the houses were examined and were generally found to be in good condition with the exception of 19 Westminster Avenue on which paint peeling had occurred. This house was sold previous to the 1961 program and was not included



in the group repainted at that time. Of particular interest was the excellent condition of 114 Spring Street (Figure 5) as this house had been cause for chronic complaint regarding its unsightly appearance since it was built.

The final examination of the houses included in this study was made on 12 March 1964 following the advice that they would be repainted later that year. Examination of the 21 houses repainted in 1961 revealed that they were generally in excellent condition in contrast to their condition in the spring of 1961. Some minor exceptions can be taken to this general statement as follows: No. 23 Westminster (Figure 6) showed some limited peeling on the south wall, No. 15 Westminster (Figure 7) had spot peeling on the north wall, and No. 11 Westminster (Figure 8) was peeling badly on the north wall. As No. 19 Westminster was referred to in the August 1963 visit (although not included in the 1961 repainting program), a further examination was made in March 1964. At this time excessive peeling was occurring on the east wall (previously reported south and north exposures only) indicating perhaps that while roof overhang delays paint deterioration by the elements it does not guarantee absolute protection against peeling.

By March 1964 the number of houses still owned by C.M.H.C. had been reduced to 15; of this number six are entirely clad with bevelled wood siding (CL) involving four  $1\frac{1}{2}$ -storey houses and two bungalows; four houses (three  $1\frac{1}{2}$  storeys and one bungalow) have combination sidings (CO) -- asbestos - cement shingles to eave line with gables clad in vertical wood Vee-jointed siding -- five (all  $1\frac{1}{2}$  storeys) are clad entirely with asbestos shingles. Reports issued subsequent to the repainting of these houses in 1964 will generally only involve 15 houses and more specifically the 10 that utilize exterior wood claddings.

## DISCUSSION

Good performance for three years of a paint system applied to wood siding, but with this period following a 12-year history of failure, gives some credence to the idea that certain simple measures can be taken to improve the performance of paint on exterior wood substrates. In the absence of guaranteed procedures against paint peeling from wood sidings it might be well to examine what appear to be contributions to failure as evidenced by performance studies of paint on actual buildings.

The Amherst study, while in itself a limited statistic, is supported with regard to apparent condition and suggested causes by

a sampling involving 278 houses. The Amherst study indicated that there are exterior causes of paint deterioration and that all failures cannot be attributed to the popular theory of condensation of indoor water vapour behind the paint film.

To deviate from this specific study, members of the DBR Atlantic Regional Station had the occasion in March 1961 to examine some Army huts at York Redoubt where conditions were such as to indicate that the paint failure there could not be attributed to the condensation of inside water vapour (Figure 9). These huts were constructed during World War II and were originally clad outside with heavy mineral-surfaced rolled roofing of a type commonly used as ground barrier against rising dampness. They were clad (over the roofing) with wood drop siding in 1954 and painted. Prior to demolition these buildings remained unoccupied and unheated since 1957, when they were repainted. The buildings were uninsulated and were clad on the interior with gypsum wallboard or fibreboard. Condition of framing and wood sheathing when examined on demolition was found to be dry and free from rot.

Referring to the study in the spring of 1961 involving 278 houses, some general observations may be of interest. An analysis of over 500 moisture meter readings of wood sidings showed that most were lower than the 12 to 18 per cent range normally recommended for paintable wood surfaces. The most common readings were in the 8 to 9 per cent range with practically all below 15 per cent. Moisture contents under paint films were normally higher than for exposed wood even though the first two days of the survey were cold and rainy with some snow. Generally, moisture readings of siding near corner boards, window details, and where two pieces of siding butted on the wall, were 10 to 12 per cent higher than elsewhere on the wall or on the same piece of siding.

In all areas north walls were in better condition than the other three, independent of house type or room orientation. No doubt there are other reasons for this, including the accepted fact that north winds in winter create negative pressures on the south or lee side and thus encourage the movement of moisture-laden air from inside the house to the outside where it condenses under the paint film. Ultraviolet effects on film breakdown could also be cited. To complicate the picture it can be noted that in the Maritime region most wind-driven rain is from the south and southeast. Regardless of the causes, the observations related to this report showed that south and east walls were generally in the poorest condition.

In the Amherst area, roof overhangs apparently protect five to nine courses of clapboard from the eave line downwards (Figure 5), depending on general elevation, with peeling much in evidence on the lower courses. Peeling on wood clapboards appears to start near unprotected end grain wood near corners and window trim (Figure 10) and at the butts of vertical sidings, with the latter probably aggravated by the traditional use of a flashed "water table" where two types of siding are used in combination (Figure 11). One result of the study of 278 houses was that dark paints appear to perform better than lighter shades.

In addition to problems associated with painting wet wood and painting under adverse conditions, it would appear that some failures are due to poor architectural detail and the misuse of materials. Houses with fewer or thinner coats of paint were generally in better condition with regard to peeling after a three-year period than those with accumulated heavy coats. In the field one frequently finds excessive peeling of well ventilated soffits, and some thought should be given to the possibility that the lack of natural weathering or wear in these areas to which other parts of the house are subjected permits an excessive paint film build-up over a number of repainting cycles. Painting in 1961 involved a primer and only one finish coat. Painting prior to 1961 had always consisted of a primer and two finish coats.

No changes have been made to the houses in the Amherst study that would alter the indoor humidity conditions or resistance to vapour flow from inside. In view of this it is reasonable to assume that the apparent success of the most recent repainting (1961) is attributable to "outside" factors as opposed to changes in the typical winter condensation cycle. Weather factors during the time of painting also have to be considered and need to be included with the many variables that might relate to the problem of paint peeling from wood sidings.

From weather records for 1958 and 1961 taken at Nappan (about 5 miles from Amherst) it can be shown that during the 1958 painting period (July to August) rainfall totalled 8.95 in. (Halifax, 8.74 in.) and during the 1961 period (September to October) rainfall for Halifax totalled 11.30 in. (no records during this period for Nappan). The rainfall for the three months preceding the 1958 painting period totalled 9.59 in. (Halifax, 12.90 in.) and for 1961 it totalled 8.33 in. (Halifax, 11.30 in.). Hours of sunshine for the three months preceding the 1958 painting period totalled 520.2 (Halifax, 500.1) and in 1961 they totalled 679.4 (Halifax, 710.9). During painting periods

hours of sunshine in 1958 totalled 444.8 (Halifax, 450.6) and in 1961 they totalled 272.4 (Halifax, 263.1). There was a higher average R.H. during the 1961 painting period. While no wind data was available for Nappan, the records for Halifax indicate that the average wind speeds were similar for the two painting periods.

Although it is not known how weather factors and their influence on paint curing specifically affect performance, it might be useful to give some thought to the rainfall preceding painting and the drying conditions during and immediately following paint application.

Weather conditions for the two painting periods can be summarized as follows:

- 1961 - cooler than 1958
- 1961 - R.H. similar to that in 1958
- 1961 - slightly more wind than 1958
- 1961 - more rain than 1958.

A summary of weather data for the three months preceding painting indicates:

- 1958 - more rain than 1961
- 1958 - more wind than 1961
- 1961 - more sun than 1958.

Weather data for Halifax are included to indicate the differences that exist for the same periods within the limits of a relatively small geographical area. For future detailed studies, the relative location of an established weather station or an automatic recording station would be an important consideration.

## CONCLUSION

The field study of paint performance on wood sidings involving the 21 houses referred to in this report is substantiated by a much larger sampling involving 278 houses in the region. This study indicates that architectural detail, orientation, wind and rain, sunlight, surface preparation and workmanship should all be considered, along with the materials involved, in studying the phenomenon of paint peeling on wood. All too frequently, condensation of water vapour originating

within the house has been cited as the only cause of paint peeling from wood sidings.

Over the period 1949-61, during which the houses were repainted every three years, paint had peeled consistently from the houses considered in this report. From an examination of these houses in March 1964, it appears that repainting in the fall of 1961 to exacting specifications and under careful inspection has given excellent performance. Tenders were called for repainting, during the summer of 1964, the 15 houses still owned by C.M.H.C. but surface preparation should be limited to washing, light sanding (localized areas only) and some spot priming. In view of the three-year repainting cycle one finish coat over the existing paint should suffice.

Repainting in 1961 involved careful and detailed surface preparation, a primer and one finish coat with specified caulking between the primer and finish coat. Repainting prior to 1961 had always involved a primer and two coats with much of the subsequent peeling occurring over old unremoved coats of paint. In the writer's opinion heavy paint build-up, as is likely to be the case where two finish coats (over a primer) are applied every three years, is cause for suspect in considering paint failure by peeling.

Surface preparation involved burning and/or scraping to bare wood on certain walls as detailed in the specifications prepared, following a condition survey in the spring of 1961. Inspections were made following surface preparation, following application of the priming coat and when finish coat work was completed.



East Side Westminster Avenue

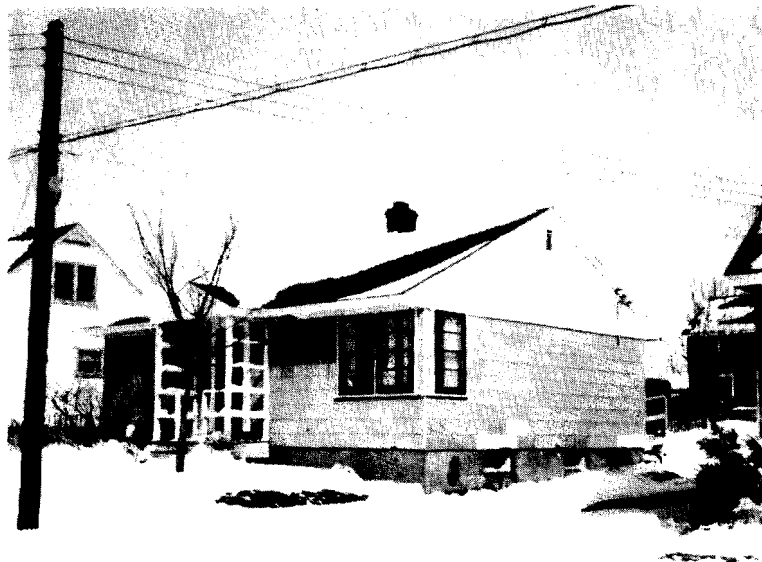


West Side Westminster Avenue

Figure 1 Looking North from Spring St. on Westminster Ave. C.M.H.C. Houses, Amherst, Nova Scotia

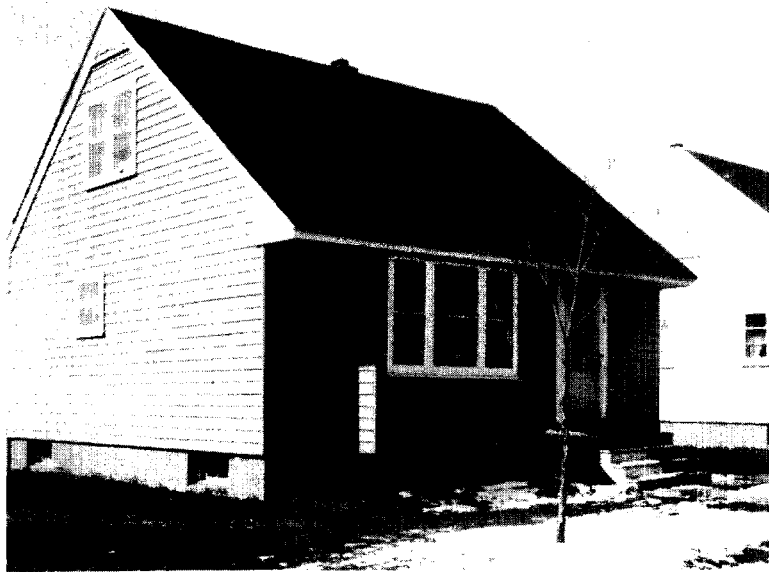


1  $\frac{1}{2}$  Storey



Bungalow

Figure 2 Asbestos Siding to Eave Line with Vertical  
Wood Vee-Joint at Gables  
(Note Peeling Bottom of Vee-Joint)



1  $\frac{1}{2}$  Storey



Bungalow

Figure 3 Bevelled Wood Siding on all Exterior Wall Surfaces



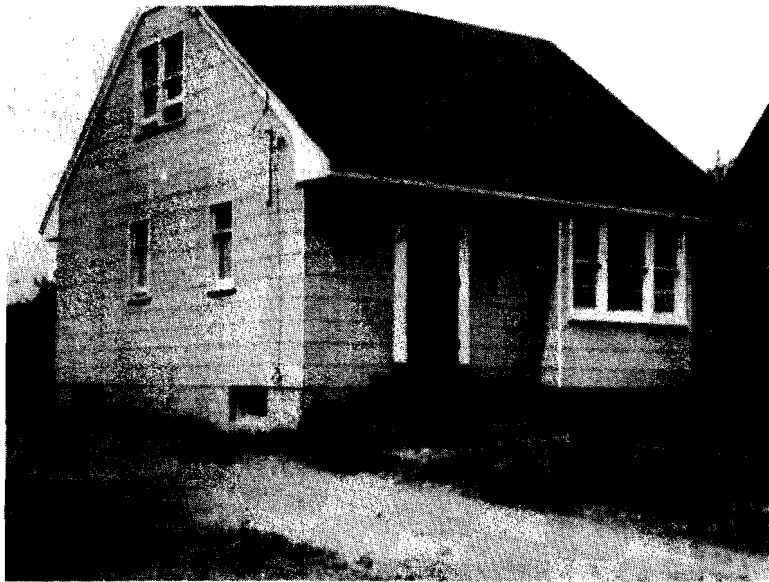
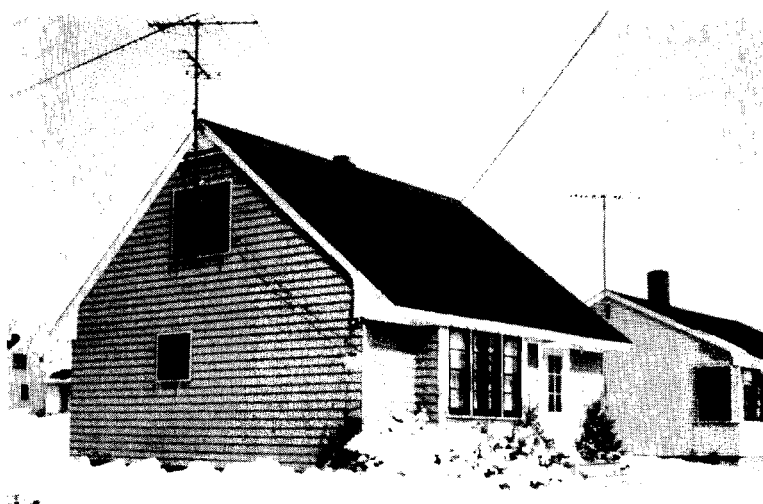


Figure 4  $1\frac{1}{2}$ -Storey House with Asbestos Siding on  
All Exterior Wall Surfaces

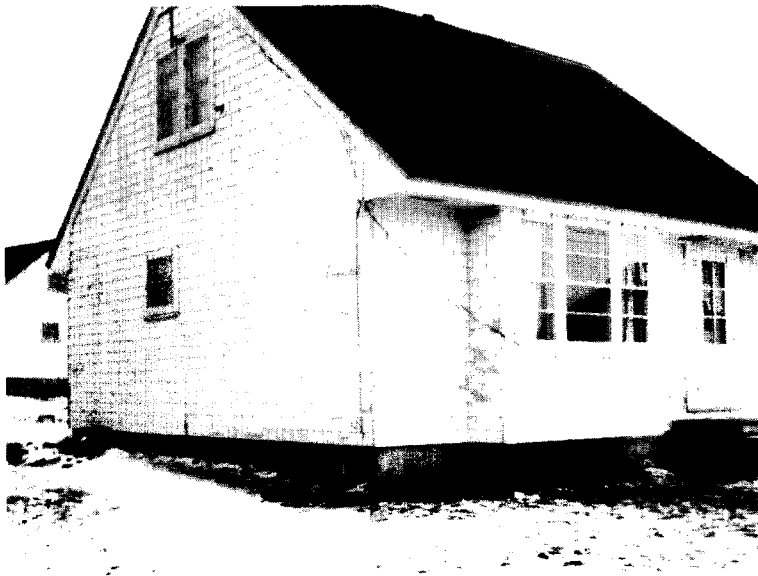


(a) 14 August 1957

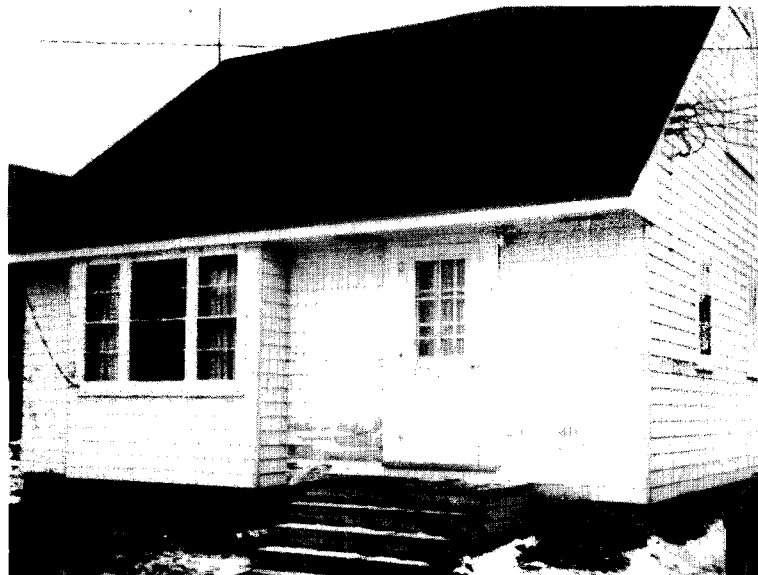


(b) 12 March 1964

Figure 5 Various Conditions of Paint on Wood Siding,  
114 Spring St. (South and Southeast Exposure)



(c) 19 April 1961



(d) 19 April 1961

Figure 5 Various Conditions of Paint on Wood Siding, .  
114 Spring St. (South and Southeast Exposure)

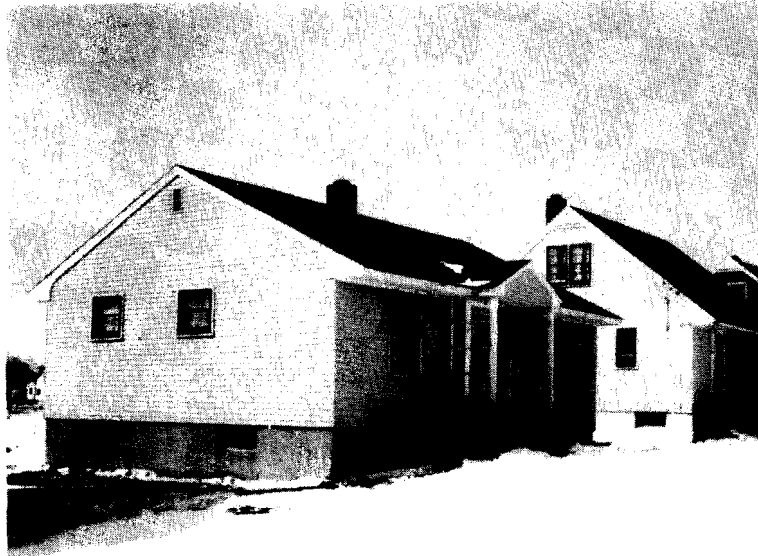


Figure 6 Limited Peeling on South Wall, 23 Westminster Ave.



Figure 7 Spot Peeling on North Wall, 15 Westminster Ave.



Figure 8 Severe Peeling on West Half of North Wall,  
11 Westminster Ave.



Figure 9 Paint Peeling on Unoccupied Army Hut -  
York Redoubt

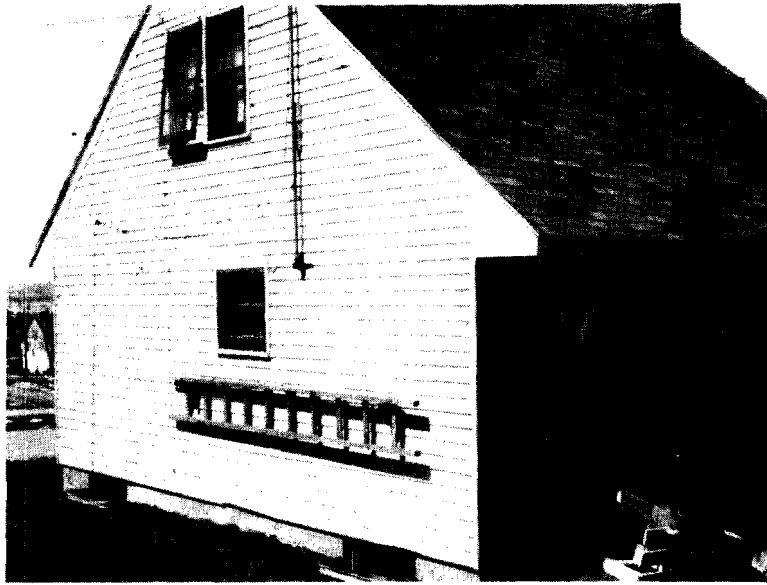


Figure 10 Paint Peeling Starting Near Wood Trim and Window Details

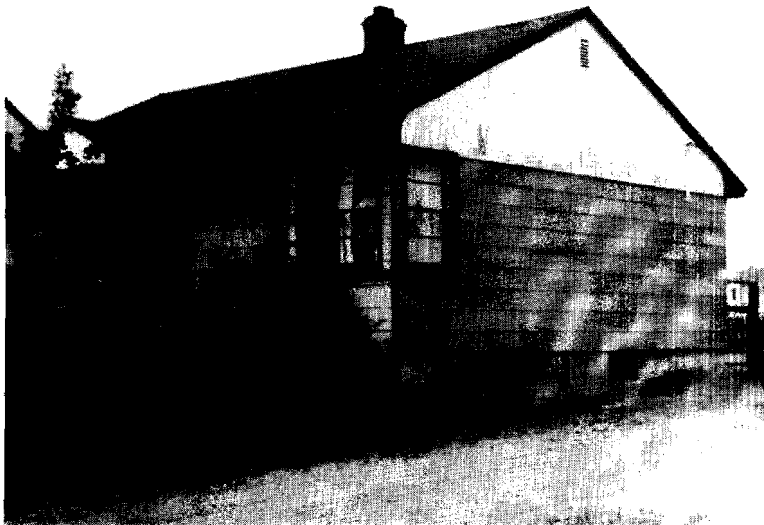


Figure 11 Peeling of Vertical Vee-Joint Butts at Water Table

## APPENDIX I

### Condition Report of Amherst Houses Based On Examination in August 1957 and Abstracts From General Observations and Suggested Corrective Measures Made At That Time Relative To Construction Details and Materials

#### GENERAL OBSERVATIONS

Of the 13 houses clad with wood siding 12 have some walls that can be rated poor and should be repainted. Some peeling is limited to areas around openings while, for example, on 114 Spring Street (Figure 4) all walls have severely peeled. Of the 13 houses with combination siding (asbestos side walls to eave line and vertical wood Vee-joint gables), all but two face east or west and wood gables on north and south exposures are involved. Practically all of these exposed to the south are in poor condition. Some have peeled badly all over while others have peeled at the joints, butts, and around windows. There is something to be said for the omission of the flashing and water table at the butts in the future use of Vee-joint siding on gables and for letting these butts be painted and backprimed for a foot or two and installed to lap the siding below for a few inches. This would reduce and might even eliminate wicking at the butts of the siding. Generally the south-exposed walls show the greatest extent of paint failure for all types. Conditions of paint on bungalows and  $1\frac{1}{2}$ -storey houses, based on observations made in 1957, are given in Tables I and II of this Appendix.

#### CORRECTIVE MEASURES

The following repainting should be done:

- (1) all houses with bevelled wood siding;
- (2) all wood gables and trim where combination sidings are used;
- (3) all wood trim on asbestos-clad houses.

## PREPARATION FOR PAINTING

All flashing details should be checked and repaired as found necessary. Cracked siding and other means of entry for rain and snow should be repaired or replaced. All loose paint should be scraped or burned off. Caulking should be provided (following prime coat) around windows, doors, and corner boards to prevent end wicking by the siding. Caulking should be carried out on asbestos-clad houses as well.

## PAINTING

All bare wood should be spot primed with a recognized wood primer (not merely finish coat paint cut with linseed oil) as recommended by the manufacturer of the undercoat and finish paint specified. Prime coats should be followed by undercoats and finish coats with a recommended period between coats for drying and curing. All painting should, of course, be carried out under suitable weather conditions.

## INSULATION

Insulation should be removed from rafters in the  $1\frac{1}{2}$ -storey houses and the floor and dwarf walls insulated as prescribed for this style of house. A good fill-type insulation between floor joists would be suitable if proper vapour barrier and/or ventilation procedures are observed. When this is done, special care should be taken to insulate the sidewalls and above the ceiling of the stair well to prevent surface condensation; otherwise these surfaces are exposed to low temperatures because of the above recommended changes to the space under the eaves. Access hatches should be provided to the space above the upstairs ceiling in these houses, and care should be taken to install insulation carefully and correctly at this point if it has not already been done. Hatch covers should be insulated. Backs of existing doors leading to under-the-eave areas should also be insulated.

## VENTILATION

The above insulation changes in the  $1\frac{1}{2}$ -storey units should allow the existing vents to function more efficiently. Gable end vents should be doubled in size and provided with the necessary screening. Care should be taken with insulation details to see that soffit vents provide free air passage to attics. There is some merit in relocating



the soffit vent on the stairwell side to prevent the stairwell from being in the path of cold air entering the vent. A suggested alternative would be to provide two 4- by 10-in. vents (one near either end) on this side of the  $1\frac{1}{2}$ -storey houses. Ventilation in the bungalows appears adequate, but details should be checked to assure that soffit vents have direct access to the attic space.

### VAPOUR BARRIERS

Anything but a vapour barrier paint would be too expensive and impractical to apply at this stage. Most interior walls already have several coats of various type paints on them, but for future redecorating it is suggested that a barrier type paint be used in two coats on walls and ceilings. Where ceilings must be renailed to hold fill-type insulation under the eaves, redecorating will be necessary anyway, and a vapour barrier paint should be specified.

### BASEMENTS

These are reportedly damp, probably due to wicking through the concrete slab. It is doubtful if drain tile or granular underlay has been provided. Drain tile could not now be justified economically; if no granular underlay is present, then a sump to keep the water below the underside of the slab would not function. It is suggested that there is no economical cure for these basements. Gutters and downspouts coupled with changes to surrounding grades might serve to reduce the amount of water going directly down the wall to the footings.

### HEATING SYSTEM

The systems now installed do not provide good heat distribution, and some tenants report excessively high heating bills. Suggested insulation changes would help but no changes to heating systems can be justified economically. If water pans have been used, it would be well to dispose of them as the basement will ensure adequate moisture levels in these houses.

In view of the fact that tenders will have to be called for repairs to these houses (if made to all houses in this group), it is suggested that one or two units be selected to receive special and detailed consideration by a contractor of the Corporation's choosing. Unless something is done experimentally and of this nature, little will be learned from this project about the failure of paint on wood sidings.

TABLE I  
CONDITION OF PAINT ON BUNGALOWS IN 1957,  
AMHERST STUDY

STREET	HOUSE NO.	SIDING	FACING	WALL CONDITIONS				SOFFITS	COLOUR
				N	E	S	W		
Spring	116	CL	S	G	P	G	P	P	Light brown
Westminster	16	CO	W	G		P		G	Buff; cream gables and dark green trim
	17	CO	E	G		F		G	Green, cream gables and brown trim
	23	CL	E	G	F	F	G	G(E) F(W)	Dark green; white trim
	24	CL	W	P	F	P	F	G	White; red trim
	30	CO	W	G		P		G	Green; white gables and red trim
	36	CO	W	G		P		G(E) P(W)	Light brown; white gables; red trim

Legend

CL - Bevelled wood siding

CO - Combination (asbestos shingles to eave line and wood gables)

A - Asbestos shingles

G - Good - no peeling

P - Poor - peeling badly

F - Fair - peeling here and there

N)

E)

S)

W)

Compass points

TABLE II

CONDITION OF PAINT ON 1½-STORY HOUSES IN 1957,  
AMHERST STUDY

STREET	HOUSE NO.	SIDING	FACING	WALL CONDITIONS				SOFFITS	COLOUR
				N	E	S	W		
Spring	114	CL	S	P	P	P	P	G	White; red trim
	118	CO	S		G		P	F	White; cream gables
	120	CL	S	F	P	P	P	Newly Painted	Was brown; being repainted blue
	122	A	S					G	Light green
	124	CO	S		F		F	G	White; cream gables
	126	A	S					G	Buff
Westminster	1	CL	E	F	F	P	G	G	Cream; dark green trim
	3	CO	E	G		P		G	Buff; cream gables; dark brown trim
	5	A	E					G	Green; cream trim
	7	CL	E	P	P	P	P	G	White; dark green trim
	9	CO	E	G		P		P	Buff; brown gables; light green trim
	10	CL	W	F	F	P	F	G	Cream; red trim
	11	CL	E	F	G	P	G	G	Cream; black trim
	12	A	W					G	White; dark green trim
	14	CO	W	P		P		F	Light green; dark green gables; white trim
	15	CL	E	P	P	P	P	G	White; dark green trim
	18	CO	W	F		P		G	White; dark green gables; white trim
	19	CL	E	G	F	P	F	G	Cream; green trim
	21	A	E					G	White; cream trim
	25	A	E					G	Buff; cream trim
	27	CO	E	F		P		G	White; cream gables; red trim
	29	CL	E	P	F	P	P	P	Light brown; white trim
	31	A	E					G	Green; cream trim
	32	A	W					G	Buff; cream trim
	33	CL	E	F	F	P	P	G	White; light green gables; dark brown trim
	34	CO	W	F		P		G	White; light green gables; dark green trim
	35	CO	E	F		P		G	White; light green gables; dark green trim
	38	A	W					G	Light green; dark green trim

## APPENDIX II

### Abstract from Specification for Exterior Painting of Housing Units, Amherst, N.S.

#### 1. GENERAL CONDITIONS

##### (a) Exterior Woodwork

All exterior woodwork, storm sash, screens, combination doors, wood siding and plywood shall be painted one (1) coat, after primer, except that all porches, railings and steps shall be repainted two (2) coats after primer.

##### (b) Asbestos Shingles

Asbestos shingles to remain untouched, except as noted below.

#### 2. WASHING

All wood surfaces not burned shall be washed with 5 per cent trisodium phosphate in clear water solution. Cleaning agent to be applied with a stiff bristle brush to remove all dirt, grime and other foreign matter. After washing is completed all surfaces so treated shall be rinsed with clear water to remove all traces of the cleaning solution.

#### 3. PRIMING

All surfaces of exterior woodwork, exposed by peeling, burning or scraping off of old paint shall be primed with one coat of acceptable primer.

Galvanized steel and other ferrous metal exposed by peeling or scraping shall be treated with an acceptable metal conditioner.

#### 4. SAMPLES AND APPROVAL

As soon as the contract is awarded, the painting contractor shall submit for the approval of the Manager or his appointee, a list showing the manufacturer's name, number, and colour of paints proposed for each painting operation. This list must be

accompanied by coloured chips showing the proposed grades.  
No work shall be started until these have been approved.

## 5. MATERIALS

(a) All materials shall be at least equal to the relevant Canadian Government Specifications as listed hereunder. Only brands of paints, stains, and varnishes which have been accepted by C.M.H.C. shall be used. The list of acceptable brands may be seen at any Branch or Loans Office of the Corporation.

### Primer

- |     |                   |   |           |
|-----|-------------------|---|-----------|
| (a) | exterior woodwork | - | 1-GP-55c  |
| (b) | metal conditioner | - | 31-GP-105 |
| (c) | metal primer      | - | 1-GP-40b  |

### Wash

- |  |                   |   |                                 |
|--|-------------------|---|---------------------------------|
|  | exterior woodwork | - | 5% trisodium phosphate solution |
|--|-------------------|---|---------------------------------|

### Knotting

- |  |                   |   |          |
|--|-------------------|---|----------|
|  | sapwood and knots | - | 1-GP-126 |
|--|-------------------|---|----------|

### Finish Coats

- |     |                        |   |                             |
|-----|------------------------|---|-----------------------------|
| (a) | exterior paint, wood   | - | 1-GP-28b (white and tinted) |
| (b) | exterior paint, wood   | - | 1-GP-41b (solid colours)    |
| (c) | exterior enamel, alkyd | - | 1-GP-59b (white)            |

### Caulking Compound

- |  |                    |   |         |
|--|--------------------|---|---------|
|  | oil base gun grade | - | 19-GP-6 |
|--|--------------------|---|---------|

### Putty

- |  |                  |   |         |
|--|------------------|---|---------|
|  | linseed oil type | - | 19-GP-1 |
|--|------------------|---|---------|

No other material specifications will be accepted.

Note: Following are the CGSB classifications specified:

- 1-GP-55c - Primer; wood, exterior
- 31-GP-105 - Coating; conversion, zinc phosphate, for paint base
- 1-GP-40b - Primer; structural steel, oil alkyd type
- 1-GP-126 - Sealer; vinyl, for wood
- 1-GP-28b - Paint; exterior, house, white and tints
- 1-GP-41b - Paint; exterior, linseed oil type, solid colours
- 1-GP-59b - Enamel; exterior, gloss, alkyd type
- 19-GP-6 - Compound; caulking, oil base, gun grade
- 19-GP-1 - Putty; linseed-oil type, for glazing

Unless otherwise designated in the tender documents, colours shall be as selected by the Manager or his appointee. All paints, stains, varnishes, etc., shall be delivered to the job in unopened containers as originally sealed by the manufacturer and shall bear a label indicating the contents and the intended use of the product.

Important: The finish coat to be the same manufacture as the first coat. Both coats to be evenly spread by brushing.

(b) Thinners

Paint shall normally be applied in the consistency supplied by the manufacturer. Thinners shall be used only with the prior approval of the Manager or his appointee and shall be the type described on the paint container label.

6. WORKMANSHIP

(a) Preparation

All surfaces to be painted shall be thoroughly washed, cleaned and/or burned with scrapers, wire brushes, blow torches, steel wool and/or sandpaper in accordance with the detailed specifications for each housing unit until all loose paint, etc., is removed.

No further work shall be commenced until this work has been accepted.

All existing caulking around window and door openings and any

other locations is to be completely ragged out and replaced with an acceptable caulking compound. The vertical joints of all corner boards shall be thoroughly wire brushed and cleaned and an acceptable caulking compound is to be installed after the priming paint has been applied.

Loose putty on window sashes shall be removed and, after priming, replaced with an acceptable linseed oil putty with no driers added; all holes and open joints in woodwork shall be primed and puttied full and smooth. Priming coat of paint must be allowed ample time to harden before applying another coat. Woodwork showing excessive extrusion of sap shall be spot sealed with an acceptable sealer. Bare knots shall be sealed and shall be brush painted with a primer coat.

Any defects such as loose siding, shingles or broken or damaged items of any nature found while the houses are being prepared for paint are to be reported to the Manager or his appointee. No painting in the defective areas shall be done until repairs have been made or until the Manager or his appointee has given written approval to proceed. Where caulking is required as indicated on the tender form, an acceptable caulking compound shall be used around all door frames, window frames, along top of belt courses at gable ends, or wherever applicable.

(b) Paint Application

No exterior painting shall be done when the temperature is lower than 40°F. No exterior painting shall be done when the surfaces to be painted have a moisture content exceeding 14 per cent, or if the weather conditions are, in the opinion of the Manager or his appointee, otherwise unsuitable.

All painting shall be done according to the best standard practice by experienced workmen to the satisfaction of the Manager or his appointee.

Brush painting only to be used. Each coat of paint must be allowed at least 48 hr to dry before the next coat is applied and the next coat shall not be applied until the Manager or his appointee has inspected and passed the first coat. If blisters or

cracks develop after the first coat is applied, the Manager or his appointee will direct that such areas be thoroughly scraped, primed, and recoated before application of the final coating.

## 7. DETAILED SPECIFICATIONS

### 7 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat siding and trim
- West Wall : Burn, sand, prime and paint one coat siding, soffits and trim
- South Wall : Burn, sand, prime and paint one coat siding and trim
- East Wall : Scrape, wash, prime and paint one coat siding, soffits, and trim

### 11 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat siding and trim
- West Wall : Burn, sand, prime and paint one coat siding, soffits and trim
- South Wall : Burn, sand, prime and paint one coat siding and trim
- East Wall : Scrape, wash, prime and paint one coat siding, soffits, and trim

### 15 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat siding and trim
- West Wall : Scrape, wash, prime and paint one coat siding, soffits and trim
- South Wall : Same as north wall
- East Wall : Same as west wall

### 17 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat gable and trim
- West Wall : Scrape, wash, prime and paint one coat soffit and trim
- South Wall : Burn, sand, prime and paint one coat gable and trim
- East Wall : Scrape, wash, prime and paint one coat soffit and trim



21 Westminster Avenue

All Walls : Scrape, wash, prime and paint one coat, both soffits and all trim. Wire brush, wash and paint one coat all asbestos shingles with paint compatible to owner-applied vinyl latex paint.

23 Westminster Avenue

All Walls : Scrape, wash, prime and paint one coat all siding, both soffits and all trim

25 Westminster Avenue

All Walls : Scrape, wash, prime and paint one coat both soffits and all trim

27 Westminster Avenue

North Wall : Burn, sand, prime and paint one coat gable and trim

West Wall : Scrape, wash, prime and paint one coat soffit and trim

South Wall : Burn, sand, prime and paint one coat gable and trim

East Wall : Scrape, wash, prime and paint one coat soffit and trim

29 Westminster Avenue

All Walls : Burn, sand, prime and paint one coat all siding, both soffits and all trim

31 Westminster Avenue

All Walls : Scrape, wash, prime and paint one coat soffits and trim

33 Westminster Avenue

All Walls : Burn, sand, prime and paint one coat all siding, both soffits and all trim

35 Westminster Avenue

North Wall : Burn, sand, prime and paint one coat gable and trim

West Wall : Scrape, wash, prime and paint one coat soffit and trim

South Wall : Burn, sand, prime and paint one coat gable and trim

East Wall : Scrape, wash, prime and paint one coat soffit and trim

10 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat  
siding and trim
- West Wall : Burn, sand, prime and paint one coat  
siding, soffit and trim
- South Wall : Burn, sand, prime and paint one coat  
siding and trim
- East Wall : Burn, sand, prime and paint one coat  
siding, soffit and trim

12 Westminster Avenue

- All Walls : Scrape, wash, prime and paint one coat both  
soffits and all trim

18 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat  
gable and trim
- West Wall : Scrape, wash, prime and paint one coat  
soffit and trim
- South Wall : Burn, sand, prime and paint one coat gable  
and trim
- East Wall : Scrape, wash, prime and paint one coat  
soffit and trim

24 Westminster Avenue

- North Wall : Scrape, wash, prime and paint one coat siding  
and trim
- West Wall : Burn, sand, prime and paint one coat siding,  
soffits and trim
- South Wall : Burn, sand, prime and paint one coat siding  
and trim
- East Wall : Scrape, wash, prime and paint one coat siding,  
soffits and trim

32 Westminster Avenue

- All Walls : Scrape, wash, prime and paint one coat both  
soffits and all trim

36 Westminster Avenue

- All Walls : Scrape, wash, prime and paint one coat both  
soffits, both gables and all trim

114 Spring Street

All Walls : Burn, sand, prime and paint one coat all siding. Scrape, wash, prime and paint one coat both soffits and all trim

116 Spring Street

North Wall : Scrape, wash, prime and paint one coat siding

West Wall : Burn, sand, prime and paint one coat siding

South Wall : Burn, sand, prime and paint one coat siding

East Wall : Burn, sand, prime and paint one coat siding

All Walls : Scrape, wash, prime and paint one coat both soffits and all trim

126 Spring Street

All Walls : Scrape, wash, prime and paint one coat both soffits and all trim