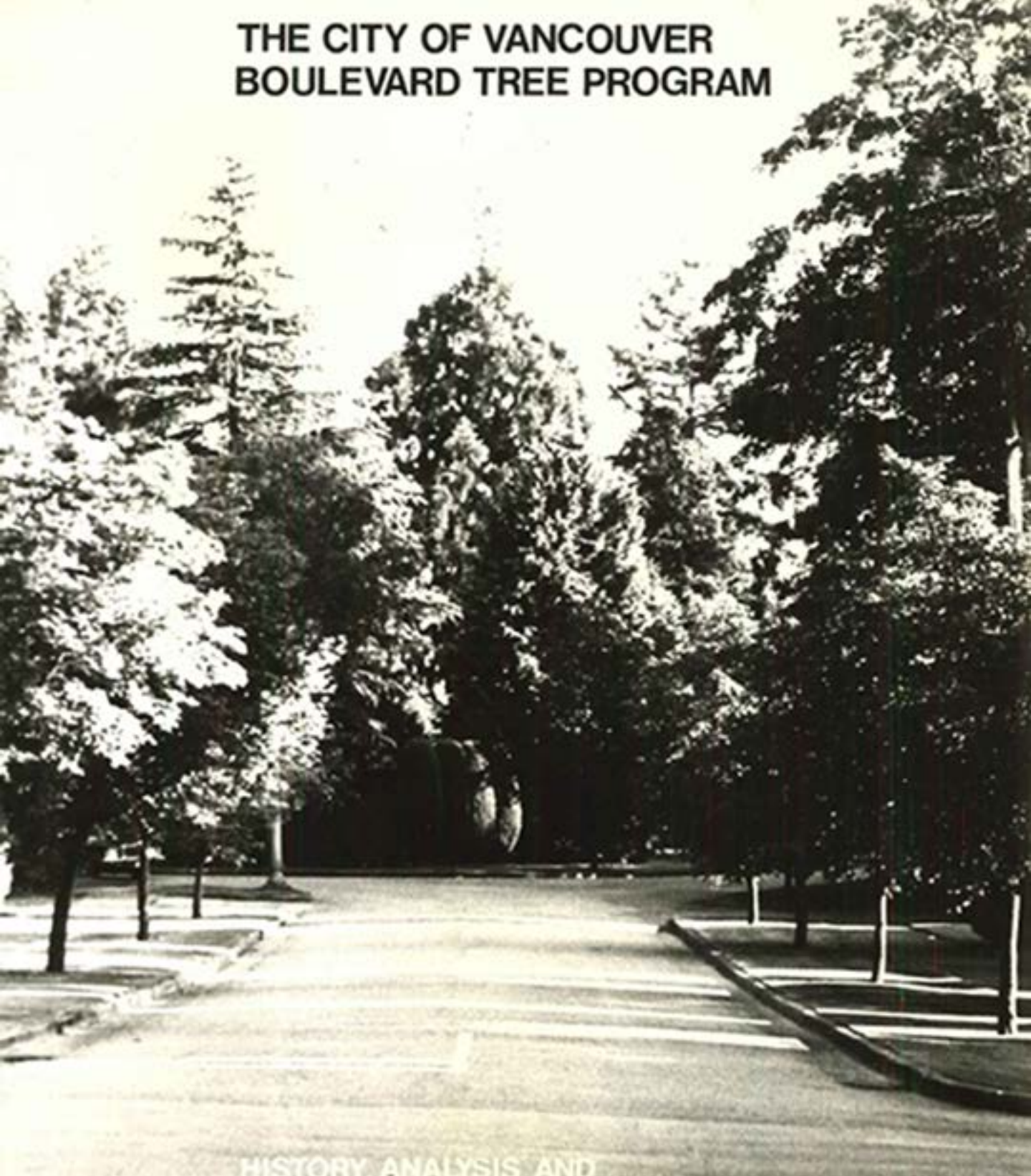
THE CITY OF VANCOUVER
BOULEVARD TREE PROGRAM



HISTORY, ANALYSIS AND
RECOMMENDATIONS FOR MANAGEMENT

Part 2
Appendices

VOLUME II

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- Crew Productivity
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- Bird Control
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- Pruning for View
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- Roots vs. land owners
- Roots vs. sewers
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- Money vs. workload
- Work responsibilities vs. salary
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- Vehicle heights vs. low branches
- Trees vs. street furniture
- Trees vs. street sweepers
- Treatment of exceptions vs. practice and policy
- Past practice vs. Arboricultural practice
- Tree supply vs. maintenance responsibilities
- Politicians vs. Arboricultural practice
- Public rights vs. Politicians
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- Store signs vs. trees
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- Crossings vs. Park Board
- Council vs. Park Board
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  II. Complaints
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- Construction vs. tree protection
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APPENDIX 4.

City Charter Amendment from 1912

EXTRACT FROM "VANCOUVER INCORPORATION ACT, 1900, AMENDMENT ACT, 1913."

Sub-Section (78a) of Section 125 of the Principal Act, as enacted by Sub-Section (g) of Section 7 of the "VANCOUVER INCORPORATION ACT, 1900, Amendment Act, 1906, is repealed, and the following enacted in lieu thereof:-

"(78a) - For settling apart such portion of any street, lane, square, or other public place, as the Council may from time to time by resolution determine, as boulevards or grass plots, and for constructing, maintaining, sodding, planting (either with grass, trees, shrubs, or plants), caring for, and keeping in good order, repair and condition by the Park Board such boulevards or grass plots as and when the Council shall by resolution direct, and for assessing and charging, by resolution of the Council, the land fronting on any such street, lane, square, or public place, and the owners or occupiers of such land with the payment of any and all sums necessary to meet the cost and expenses of the constructing, maintaining, sodding, planting, caring for, and keeping in good order, repair, and condition such boulevards or grass plots in front of such land (but not to any greater extent thatn ten cents a year for each front foot of such land) in like manner and with the same powers of recovery and of sale of land as in the case of ordinary taxes upon lands; Provided that none of the provisions of this Act and amending Acts relating to local improvements shall apply to the aforesaid works of construction, maintenance, sodding, planting, caring for, and keeping in good order, repair and condition grass plots and boulevards, which works, shall be performed and carried out by the Park Board."

APPENDIX 5.

Streets or Portion of Streets transferred to Board of Park Commissioners for Maintenance during 1914

LIST OF BOULEVARDS TURNED OVER TO PARK BOARD BY CITY COUNCIL ON (a) MARCH 12th, 1913; and (b) FEB. 11th 1914.

	Street	From	To
(a)	Chilco St.	Beach Ave.	Haro St.
	Gilford St.	Beach Ave.	Georgia St.
	Bidwell St.	Beach Ave.	Georgia St.
	Cardero St.	Beach Ave.	Georgia St.
	Nicola St.	Beach Ave.	Robson St.
	Broughton St.	Burnaby St.	Robson St.
	Jervis St.	Burnaby St.	Robson St.
	Bute St.	Burnaby St.	Pender St.
	Thurlow St.	Harwood St.	Pender St.
	Eveleigh St.	Burrard St.	Thurlow St.
	Melville St.	Burrard St.	Pender St.
	Georgia St.	Burrard St.	Cardero St.
	Alberni St.	Thurlow St.	Denman St.
	Haro Sto.	Burrard St.	Chilco St.
	Barclay St.	Burrard St.	Park Road.
	Nelson St.	Burrard St.	Park.
	Comox St.	Burrard St.	Park.
	Pendrill St.	Burrard St.	Park.
	Burnaby St.	Burrard St.	Bute St.
	Harwood St.	Thurlow St.	Nicola St.
	Scott St. centre.	Eighth Ave.	15th Ave.
(b)	WARD 3.		
	Oxford St.	Wall St.	Nanaimo St.
	Cambridge St.	Wall St.	Nanaimo St.
	McGill St.	Wall St.	Nanaimo St.
	Trinity St.	Wall St.	Nanaimo St.
	WARD 4.		
	Charles St.	Victoria Dr.	Commercial Dr.
	William St.	Victoria Dr.	Commercial Dr.
	Woodland Dr.	Venables St.	Kitchener St.
	Napier St.	Victoria Dr.	Lakewood Dr.
	WARD 5.		
	10th Ave.	Woodland Dr.	Commercial Dr.
	11th Ave.	Woodland Dr.	Commercial Dr.
	8th Ave.	Kingsway	Scott St.
	10th Ave.	South Cambie	Scott St.
	12th Ave.	Columbia St.	Main St.
	13th Ave.	Scott St.	St. Catherines St.
	Alberta St.	Broadway	16th Ave.
	Columbia St.	Broadway	12th Ave.
	Heather St.	Broadway	16th Ave.
	7th Ave.	Sophia St.	Cambie St.
	12th Ave.	Victoria Dr.	Pr. Edward St.
	WARD 6.		
	12th Ave.	Columbia St.	Granville St.
	11th Ave.	Oak St.	Granville St.
	10th Ave.	Laurel St.	Granville St.
	3rd Ave.	Fir St.	Vine St.
	2nd Ave.	Fir St.	Trafalgar St.
	1st Ave.	Cypress St.	Macdonald St.
	Cornwall St.	Yew St.	Trafalgar St.
	Triangular Plot	Kingsway	11th Ave.
	Triangular Plot	Macdonald St.	1st Ave.

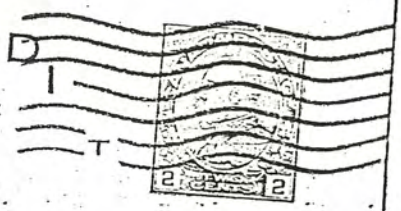
APPENDIX 6.

Example of Request Card Used as Application by Property Owners for Tree Planting in 1916

CANADA POST CARD

THE ADDRESS TO BE WRITTEN ON THIS SIDE

VANCOUVER B.C. SEP 28 3 PM 1916



ALDERMAN R. H. GALE

Ward Six Tree Planting Association,

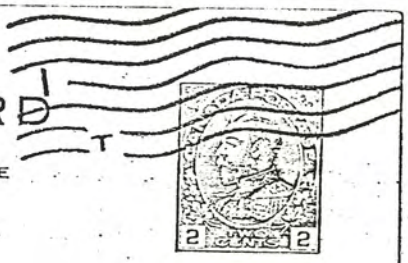
DOMINION BUILDING,

CITY.

CANADA POST CARD

THE ADDRESS TO BE WRITTEN ON THIS SIDE

VANCOUVER B.C. SEP 29 11 AM 1916



ALDERMAN R. H. GALE

Ward Six Tree Planting Association,

DOMINION BUILDING,

CITY.

Vancouver, B. C., Sept 27 1916.

I hereby make application, through the WARD SIX TREE PLANTING ASSOCIATION, to the Board of Park Commissioners, of the City of Vancouver, for 10 trees, which, should this application be granted, I will undertake to have planted, in accordance with the usual requirements, on the boulevard at

3622 - 7th Ave. W.

Please give Street Number, D. L. and Block Number if possible.

Yours truly,

Name [signature]

Address 3622 - 7th Ave West

Vancouver, B. C., Sept 28th 1916.

I hereby make application, through the WARD SIX TREE PLANTING ASSOCIATION, to the Board of Park Commissioners, of the City of Vancouver, for 10 trees, which, should this application be granted, I will undertake to have planted, in accordance with the usual requirements, on the boulevard at

Lots 1-2 Blk 202 D.L 526

100 ft 1st avenue 120 ft Balsam

Please give Street Number, D. L. and Block Number if possible.

Yours truly,

Name [signature]

Address 1644 Balsam St

+ Limestone 1st Ave - Nov. 9.16.

APPENDIX 7.

Abstract from Park Board Minutes
of Meeting held on November 26,
1919

Extract from Park Board Minutes, Nov. 26th, 1919.

TREES FOR BOULEVARD PURPOSES.

The Superintendent, in a report on the condition of trees in the Nursery for Boulevard purposes, stated that the same were in urgent need of transplanting, otherwise they would deteriorate.

WHEREAS provision has been made in the City Charter for the maintenance and upkeepof City Boulevards by the City, under the direction of the Park Board, and

WHEREAS certain Boulevards have from time to time been turned over to the Park Board by the City Council for the purpose of exercising jurisdiction over them, more particularly as relating to trees thereon, and

WHEREAS requests from citizens are continually being made in the matter of removal of (a) certain trees which by reason of their immense growth exclude sun and light from their residences, and (b) the pruning and trimming of such trees in certain cases, and

WHEREAS in recent years a large number of trees supplied from the Park Nurseries have been planted by citizens under the direction of the Park Board, which need constant care and attention to secure their proper growth, and

WHEREAS there are a large number of trees in the Park Nurseries for Boulevard and planting purposes, urgently in need of transplanting, and

WHEREAS no appropriation has been made by the City Council to enable any work of this nature to be carried out by the Park Board, and

WHEREAS in the opinion of this Board it is urgently necessary that a definite policy be established as to the planting and care of Boulevard trees, and an annual grant made for this specific purpose,

THEREFORE BE IT RESOLVED: That this Board recommends the City Council to determine a definite policy on this matter, and to make such financial arrangements as will enable the Park Board to undertake the systematic planting, care and attention of Boulevard trees to ensure their proper growth, and to deal with the various matters which constantly come before them requiring immediate attention.

FURTHER RESOLVED: That the question of the planting of the trees be referred to the 1920 Board.

APPENDIX 8.

Six Major Recommendations Extracted from 1920 Report prepared by Superintendent Rawlings for the Board of Park Commissioners

Vancouver, B.C., January 28th, 1920.

To the Honourable Board of Park Commissioners,
Vancouver, B.C.

Gentlemen:-

Re Boulevards.

In accordance with your instructions, I beg to report on the present standing in regard to control and maintenance of City Boulevards.

Action was first taken by the Park Board in February 1909 by resolution urging upon the City Council the need of the systematic planting of trees and maintenance of boulevards by the Park Board. With the exception of an Amendment of the City Charter on the subject of the control and maintenance of the boulevards, nothing of a definite nature has resulted; neither has any progress been made since, notwithstanding requests made to the City Council by the Park Board every year to put into effect the powers given the City in the Charter.

In February 1912, at a joint meeting of the City Board of Works and the Park Board, the following resolution was adopted and sent to the City Council:-

> "That certain streets be provided with permanent kerbs, and that the boulevards be surfaced and made ready for the planting of trees, and that when accomplished the Park Board be asked to take over the same for purposes of beautifying and maintenance, the funds for which to be derived from a frontage tax.
>
> ALSO that the City Engineer be instructed to have the boulevards of all streets with permanent sidewalks and kerb put in shape immediately."

In 1913, as an outcome of this action, the City Charter was amended (see annexed Sect. 78a) to provide for the control by the Park Board of such boulevards as and when the City Council may by resolution direct, the funds for which to be derived from a frontage tax, not to exceed 10¢ per foot front, to be assessed by the City Council by resolution.

It is unfortunate that the word "constructing" crept into the clause as the joint Committee in their report made the point very clear that maintenance only was to be covered by a frontage tax. It is obvious that the maximum amount of 10¢ per foot referred to would scarcely be sufficient to cover maintenance charges at present day costs, to say nothing of construction. Funds for construction, such as grading, soiling, seeding and planting must be provided for from an entirely independent source, such as Local Improvement or Special Grant.

Although the following resolution of the City Council was adopted, nothing to this end has been yet accomplished:-

> "That the following boulevards and triangular plots (as annexed) be transferred to the Board of Park Commissioners for maintenance, and the City Solicitor requested to take steps to have the necessary arrangements made to assess the fronting property for the cost of the work for this list, and also for the list previously transferred".

Again in October 1916 the City Council adopted this resolution:-

> "That the Park Board be given full jurisdiction over all tree planting and maintenance of trees on the City Boulevards; the Board to ascertain from the City Engineer's Office before any tree planting is done, as to whether the boulevards are to the Permanent grade."

but because it carried no funds with it nothing could be done by the Board.

The City Solicitor in 1917 advised when the question of funds for boulevard maintenance was discussed with him by a Committee of the Park Board, that it would be illegal to utilize funds voted for park purposes for boulevard operation.

In June 1917 two bylaws were adopted, one to regulate the planting, care and control of trees and boulevards; and the other regulating "Arbor Day". The former has regard to the putting into effect of the terms of the Charter on this matter.

It will be seen from the annexed list that a large number of boulevards have been turned over to the control of the Park Board, but by reason of the fact that no funds for this special work were provided, nothing has been done in this matter.

To enable work of an urgent nature to be carried out, such as the removal of dead or dangerous trees, and the pruning of such as by reason of their great spread were a menace to traffic; the following expenditures have been incurred by the Park Board, under Special Grant:-

1916	$228.29	1918	$ 355.33
1917	500.00	1919	227.24

The large number of trees in the nursery for boulevard planting had in 1916 grown to such a size as to render their transplanting urgent. As a result the Board decided to grant these trees to property owners on application for planting on the boulevards under direction of the Park Board, the locations being fixed by this Department. To date, over 2000 trees have been supplied, while we still have a large number left which should be either transplanted, or heavily pruned. It is to be regretted that practically no attention has been given to these trees planted out in the last two or three years, for lack of funds, a period when they

should receive careful treatment to ensure their proper growth.

From the foregoing it will be observed that since 1909 each successive Park Board has done all in its power to get action in this important civic work. Charter power was first obtained to enable a systematic scheme to be put into operation, then new By-Laws were drawn up and approved to regulate their control; trees were obtained and held in readiness to plant. From time to time full control has been given the Park Board by resolution of the City Council, and many streets turned over, but on almost every occasion when funds have been sought in the Annual Estimates to enable something to be done they have not been granted.

In view of the existing conditions, I submit for the consideration of your Board the following points:-

1. A definite decision of the City Council as to its intention in regard to exercising its powers under the Charter.

2. In the event of the City Council deciding not to adopt this proceedure, the City Council to provide the necessary appropriation to enable your Board to exercise jurisdiction over the boulevards and maintain such streets as may be agreed upon; failing which, your Board to repudiate all responsibility.

3. That providing the proceedure as set out in Clause 2 being adopted, the policy of your Board in the past to be adhered to, viz:-

(a) That the pruning or removel of large and undesirable trees be undertaken by property owners under permit issued by your Board.

(b) The care and attention of all trees recently planted from the Park Nursery, and any it may be desirable to retain, be carried out by your Board.

(c) That trees for planting on boulevards be granted to applicants if the conditions warrant, such, however, to be planted at expense of applicant in accordance with Board's regulations.

4. That your Board undertake the planting of trees on such streets or blocks as may be necessary to complete partially planted sections.

5. That whatever method of financing this work is adopted, it is advisable that the principal through avenues of travel be systematically planted, and that effort be concentrated on a particular street until completed, such as for example Georgia St. to Stanley Park.

6. That a Committee from this Board be appointed to take up the whole question with a Committee of the City Council in order to thresh the matter out so as to arrive at a definite policy and to ensure speedy action by the City Council.

Respectfully submitted,

(SIGNED) W. S. Rawlings,
Superintendent

APPENDIX 9.

Form used as Application for
Tree Plantings in 1920

BOARD OF PARK COMMISSIONERS.

Vancouver, B. C. March 19 21

APPLICATION FOR TREES FOR PLANTING ON BOULEVARDS.

Name of Applicant W. Loat

Address where trees are required 1629 Napier St.

Frontage of such property 66 feet

Number of trees applied for 5 or 6. 3 trees. notice in the

State whether street is provided with permanent kerb no

Concrete or plank sidewalk concrete

Paved or plank road No Boulevard

State kind of tree preferred Maple

(The final choice of the variety will be left to the discretion of the Park Superintendent).

(SIGNED) W. Loat
Applicant.

FOR USE OF OFFICE ONLY.

Number of trees granted 3

Variety Elm

Date supplied April 6th - Permit #37

(APPROVED) W. S. Rawlings
Park Superintendent.

APPENDIX 10.

List of Model Boulevard
Improvements included with
the 1926 Annual Report

BOULEVARD IMPROVEMENTS - 1926

Ward	Street	No. of sq.yds.	No.of Trees	Labor & Teaming	Soil, Manure, Fertilizer	MODEL Tree Guards (materials)	Water Supply	Survey, Staking & Miscl.	Digging Out in Nursery, Pruning and Spraying previous to Planting	TOTALS	
1.	Nelson	960	34	333.14	6.03x	10.71	267.95	10.00	6.80	634.63	
3.	Cambridge	616	32	248.49	7.24x	10.08	44.80x	10.00	6.40	327.01	
4.	Charles	1232	50	383.70	132.50	15.75	86.10x	15.00	10.00	643.05	
5.	Spruce	840	32	423.90	56.74x	10.08	319.10	10.00	6.40	826.22	
6.	6th Ave. W.	922	42	197.23	2.94x	12.60	168.07x	10.00	8.40	399.24	
8.	10th Ave. E.	1350	54	455.99	70.78	17.01	448.83	15.00	10.80	1,018.41	
		5920 (1.38 Mile Frontage)	244	2,042.45	276.23 x-No charge for manure.	76.23	1,334.85 x-Incomplete	70.00	48.80		3,848.56
					GENERAL PLANTING						
3.	Cambridge	...	37	59.22	2.38x	11.65	.....	6.84	7.40	87.49	
5.	Spruce	...	48	83.25	19.66	15.12	.....	10.00	9.60	137.63	
6.	6th Ave. W.	...	195	239.50	13.65	62.42	.....	40.00	39.00	394.57	
8.	10th Ave. E.	...	66	163.46	4.65x	20.79	.....	13.00	13.20	215.08	
		...	346	545.43	40.32	109.98	.....	69.84	69.20		834.77
In Stock					9.00	130.75		200.00	38.62		378.37
											$ 5,061.70

APPENDIX 11.

Extract from the 1927 Annual Report
concerning Model Boulevards

but the C.P.R., through their Land Agent, Mr. Ker, has agreed to withhold the two blocks from the market pending further negotiations. The Hotel Site is still held under lease.

A piece of property adjoining Tatlow Park with a frontage of 155.8 feet on McDonald Street, the description being Lots 3 and 4, Sub-Div. 3, S1.25, D.L. 52o, was purchased by the City Council for $5,300, and turned over to your Board for park purposes. When developed this will provide a much needed entrance to Tatlow Park from McDonald Street and will at the same time enable us to construct three tennis courts. As the cost of this addition was financed by the City Council out of current revenue, no record appears in our Financial Statement of this transaction, nor is the cost charged against this Department.

BOULEVARDS (Expenditure $6,944.45)

A definite start was made in the late fall of last year in the matter of permanent boulevard work. It will be recalled that in Wards 1,3,4,5,6 and 8 model boulevards were established to serve as an object lesson to citizens as to what is possible under a definite boulevard scheme. In the year under review these model blocks were completed and undoubtedly they stand out as examples of what our City streets should be. In addition, 1120 trees of several varieties were planted on a number of streets. Since last Fall when the work was commenced 1710 trees have been planted in all, the details of which are set out elsewhere in this report.

The above expenditure was distributed as follows:

Completion of construction of model boulevards ..	$ 1,455.63
General tree planting on Boulevards in various sections of the City	3,074.91
Tree spraying	902.02
Maintenance model boulevards	1,137.15
Maintenance of newly planted trees	187.39
Maintenance of general boulevards	187.35

[illegible] (Expenditure $2,876.25 - Dominion Government $14,010.28)

Although an appropriation of $8,000 was voted by the Dominion Government last year, the authority to proceed with the work was not received until March of this year (1927), and in consequence we had but three weeks to work before the close of the Dominion

(11)

Strathcona Park

Retaining wall on Cambie St. side of the park.

Renovation and painting of field house.

Sunnyside Park

Permanent all-metal screens for tennis courts to replace present wooden enclosure, which is in poor condition.

Tatlow Park

$2,250 provided in improvement by-law for development of new addition, including two tennis courts.

This latter item should be provided for in the Estimates as this district is in urgent need of such accommodation.

Renovation and painting of field house.

Pemoleton Park

For the development of the south block of this area for a ballground, $4,500 was included in the defeated improvement by-law.

BOULEVARDS

1710 trees were planted on the boulevards in the Fall of 1926 and the Spring of 1927. There are on hand in the nursery nearly 1000 trees which should be transplanted on to the boulevards immediately. I recommend that provision be made in the Estimates to cover this cost and the authority of the City Council obtained to proceed with such planting before the final passing of the 1928 Estimates, otherwise the work will have to be held over until the Fall.

At the request of the Boulevard Committee of the City Council I submitted a report on the subject of the dead and dangerous trees in the West End. There are approximately sixty such trees and the estimated cost of their removal is $650.00.

While a start has been made with establishing a section of model boulevards in various Wards of the City, very little has yet been done on the many miles of Boulevard needing attention. It would appear that unless, and until, the by-law authorizing work of this nature to be done under the Local Improvement Plan is adopted no very great progress is in this line of city development can be looked for. Even with the adoption of the by-law it remains for the property owner to petition for the improvement to be made, and whether much demand under this system will be made is very problematical. It occurs to me that unless funds are forthcoming by direct grant by the City Council or through the medium of money by-laws, progress in this direction will be very slow indeed. Two years ago I submitted for your consideration a full and detailed report on this whole subject, so that it is unnecessary to go further into this matter in this report.

Ref

. . .

Submitted at meeting of Park Board held on January 12th, 1928.

ANNUAL REPORT 1927

To the Honourable Board of Park Commissioners.

Mr. Chairman and Gentlemen:

I beg to submit herewith my report and financial statement for the year ending December 31st, 1927, together with my recommendations for 1928.

The total expenditure for the year was $278,391.06 as against $335,693.09 for the preceding year. The summary of this expenditure is set out under the various heads below, together with the general financial summary from 1887 - 1927.

The estimates as submitted to the City Council totalled $174,150.00 for parks and $6,750 for boulevards. The appropriations voted were - parks $160,000.00, boulevards $6,750.

The following is a summary of the receipts and expenditures for the year:

General Revenue Expenditure			$ 159,982.45
SPECIAL GRANTS			
Repairs to English Bay Pier		3,301.76	
English Bay Triangle		2,825.48	
Triangles - 11th, 13th & Kingsway, Hastings & Vernon Drive		473.84	
Playground Apparatus:-			
Revelstoke	450.00		
South Vancouver (Cyro) 2900.00			
South Vancouver	1078.31		
Burnaby	300.00		
Providence Orphanage	175.00		
Province (Hastings Park) ..	154.95		
Brewers Park	88.29	5,146.55	
Larvig Eradication		768.25	
New Bridle Trail		1,052.95	
Grandview Drill Hall Site		42.75	
City Hall Grounds		61.19	
Kitsilano Library Grounds		96.50	
Sea Wall (Government Grant)		14,010.28	27,759.55
BOULEVARDS			
Model Boulevards		1,455.63	
General Boulevards		5,488.82	6,944.45
UTILITIES			
Stanley Park Refreshment Pavilion & Second Beach Tea Room		54,150.14	
Concessions		150.65	
English Bay Bathhouse, Beach & Pier .		8,816.70	
Second Beach & Bathhouse		1,149.86	
Kitsilano Beach & Bathhouse		4,734.37	68,801.72
		Carried Forward	263,488.17

TENNIS COURTS (Self-sustaining)

Payroll	2369.95	
Materials	804.80	
New Courts, Prince Edward Park	100.25	$ 3,275.00
Receipts from Rentals		$ 3,275.00

SPECIAL GRANTS

Repairs to English Bay Pier (Grant from City Council)	$ 3,301.76
English Bay Triangle (Grant from City Council)	2,825.48
Revelstoke Playground Apparatus (Paid for by City of Revelstoke)	450.00
South Vancouver Playground Apparatus (Paid for by Gyro Club)	2,900.00
South Vancouver Playground Apparatus (Paid for by South Vancouver Municipality)	1,078.31
Brewers Park Apparatus (Paid for by City of New Westminster)	88.29
Providence Orphanage Apparatus (Paid for by Knights of Columbus)	175.00
Province Apparatus (Hastings Park) (Paid for by Vancouver Daily Province)	154.95
Burnaby Apparatus (Paid for by Municipality of Burnaby)	300.00
Barwin Post Eradication (Grant from City Council)	768.25
Bridle Trails (Grant from S. Member)	1,032.95
Kitsilano Library Grounds (Grant from City Council)	96.50
City Hall Grounds (Bulbs) (Grant from City Council)	61.19
Grandview Drill Hall Site (Grant from City Council)	42.75
Triangles - 11th & Kingsway) 13th & Kingsway) Hastings St. & Vernon Dr.)	473.84
	$ 13,749.27

BOULEVARDS

Model Boulevards (Improvements)	$ 1,455.63
General Planting (Improvements)	3,074.91
Spraying	902.02
Model Boulevards (Maintenance)	1,137.15
General Planting (Maintenance)	187.39
General Boulevard work	187.35
	6,944.45

TREES PLANTED ON BOULEVARDS 1926-27

Balsam	20	Prunis Prisadi
Bute	17	Tulip
Cambridge	186	Spanish Chestnut
Charles	50	Elm
Haro	4-	Norway Maple
Heather	102	do.
Jervis - Barclay	6	Oak
Larch	60	Oak
Nelson	34	Catalpa
Spruce	98	Norway Maple
Vine	20	Oak
3rd Ave. West	34	Norway Maple
6th " "	252	do.
8th " "	68	do.
10th " "	72	do.
" " "	93	Catalpa
10th " East	260	Horse Chestnut
12th " West	95	Elm
" " "	100	Catalpa
12th " East	115	Elm
15th " West	12	Birch
22nd " East (Renfrew Park)	12	Tulip
	1710	

SUMMARY

Birch	12
Catalpa	227
Chestnut (Horse)	260
do. (Spanish)	186
Elm	260
Norway Maple	630
Oak	85
Prunis Prisadi	20
Tulip	29
	1710

Model Boulevards	(1926)	244
General Planting	(1926)	346
do.	(1927)	1120
		1710

APPENDIX 12.

Boulevard Improvements recorded in the Annual Report from 1929

ANNUAL REPORT 1929

To the Honourable Board of Park Commissioners,

Mr. Chairman and Gentlemen:

Pursuant to the requirements set forth in the Procedure By-law governing the Departmental and official duties of the Superintendent, I herewith submit what can only be regarded as an interim report or resume of the work of the Department for the year ending December 31st, 1929. The fact that at least six weeks must elapse after the close of the financial year before the statistical data can be finally compiled for the permanent official records, which form the essential features of the Superintendent's Annual Report, this report will in due course be amended and brought up to date in the light of those records and be submitted for your information.

This year has been the most important in the history of the Park Department by reason of the amalgamation of the Municipalities of Point Grey and South Vancouver into the City and the absorbtion of the park systems of those Districts into that of the City Department, making one large park system.

The details involving the bringing into being of the one system were worked out during the period following amalgamation and the beginning of the current year, so that we were enabled to function under the new conditions on January 1st last. I stated in my last Annual Report that of necessity the operations of the Department for the first year following amalgamation would, to a certain extent, be somewhat experimental and certain details would no doubt have to be revised in the light of the experience which would be gained in the first year under the new conditions. Generally speaking, the policies as framed and adopted have worked out most satisfactorily and without confusion, and while certain adjustments may be found necessary to be made next year in the light of this year's experience, chiefly as regards appropriations for operating cost of certain parks, no radical change would appear to be necessary.

I wish at this point to express my appreciation of the work of the Messrs. Dickson and Pollock, heads of the old South Vancouver and

would have been the case had your Board's advice been followed.

The purchase of Little Mountain Park was completed during the year at a cost of $115,453.75, of which $44,934.43 was chargeable to an old park purchase by-law, $48,806.20 to Point Grey park purchase by-law, and $21,713.13 from the Civic General Revenue Account.

POINT GREY FORESHORE GRANT

With a view to acquiring all that area of foreshore extending from Spanish Banks to the Musqueam Indian Reserve, a distance of approximately 8½ miles, together with the upland wooded area between it and the Marine Drive, your Board took up the question with the Provincial Government. In the negotiations which were carried on the point stressed was that it should be set aside for the people for all time for public park and bathing beach purposes so as to prevent once and for all the threat of its being used at some time or other in the future for industrial purposes. A public enquiry was held in the City following the application, when the Minister of Lands, the Hon. F.P. Burden, heard the presentation of the case for and against the application by interested parties. In due course the decision of the Cabinet was in favour of the City's request and official notification from the Minister to that effect has recently been received. The details of the nature of the grant have not yet been communicated to your Board but it is understood the terms are in accord with the application.* This area will constitute one of the most valuable assets included in the park system and for all time precludes the possibility of its commercialization for industrial purposes.

*I See Supplement p. 32.

BOULEVARDS

After many years of effort on the part of successive Boards without result, this year saw the adoption of a definite policy by the City Council for the development of the boulevards throughout the City. This policy was laid down and adopted following several conferences between special committees of the City Council and your Board. It provides that from annual appropriations from General Revenue voted by the City Council certain streets as approved shall be permanently planted with trees suitable for the

and flower beds are being improved, irrigation service provided and walks improved.

WEST POINT GREY PARK ($~~3,285~~ 2424.76)

The development of this park was under way at amalgamation, by-law funds being used for this purpose. The four tennis courts were completed this year and put into use. A low retaining concrete wall was constructed around the wading pool, and the water supply thereto was improved. An all metal back stop was erected, the field house in course of erection last year was completed and painted. The boulevard on 8th Avenue was ploughed, levelled and brought up to grade in readiness for planting.

WOODLAND PARK ($~~220~~ 47.63)

No special comment. Maintenance only.

TRIANGLES, STREET ENDS & INTERSECTIONS ($~~5,300~~ 4526.98)

Scattered throughout the City are a considerable number of small areas of the above description which form an important item of park maintenance. One such item in particular as showing its importance and worthy of mention is the centre boulevard parkway on Angus and Osler Drives. All these areas have been maintained at a standard similar to the parks proper, several gardeners being detailed for this particular work.

BOULEVARDS ($9,250)

Reference has been made earlier in this report to the policy adopted by the City Council in reference to the future development of boulevards.

With regard to the work of the past year an appropriation was provided in the general Estimates for the maintenance of trees, etc. on streets planted on a permanent basis, particularly in the Point Grey district, in which during recent years several thousands have been planted.

The appropriation also provided for the maintenance of a number model boulevards recently constructed in several of the wards within the old City boundaries and for spraying for scale infection of the older trees in the West End; the removal of dead and dangerous trees also largely in the West End and for permanent planting on certain streets suitable for the purpose.

In addition the City Council appropriated as a special grant under the new policy $2,000 with which to undertake further permanent planting and to deal with the large type of tree in the West End, either by pruning or removal, this fund only becoming available this month.

In the early part of the year 58 large dead and dangerous trees were removed in the West End and in other parts of the old City; and all necessary spraying for lecanium scale was carried out in March. Pruning of trees planted on a permanent basis in the Point Grey District was undertaken also earlier in the year.

With regard to the work commenced early in December and still in progress, general pruning in the Point Grey district is being proceeded with.

In the West End the large trees on the boulevards of Comox and Barclay Streets are being dealt with and by tomorrow 99 on Comox from Denman to Thurlow will have been pruned and 93 limbed ready for removal, and on Barclay Street from Denman to Burrard Streets 119 have been pruned and 91 limbed ready for removal. All vacant spaces will be re-planted with suitable trees.

Since the beginning of December extensive planting under the new policy has been carried out and by tomorrow 1108 trees will have been planted on the following streets:

14th Ave. between Arbutus and Collingwood
15th Avenue between Arbutus and Collingwood
43rd Avenue between Angus and Granville
43rd Avenue between Granville and Cartier
Gillingdon Place between 41st and 43rd Aves.
Cartier Street between 43rd and 45th Aves.
33rd Avenue between Connaught and Granville
33rd Avenue between Dunbar and Collingwood
34th Avenue between Dunbar and Collingwood
37th Avenue between Dunbar and Highbury

Of this number 300 trees came from the Essondale stock recently acquired by your Board, 279 from our own nurseries and the balance was purchased.

In the earlier part of the year 160 trees from our own nursery were planted in various parts of the City to replace those dead or damaged.

CONCLUSION

APPRENTICESHIP SYSTEM

Reference should be made to the gardener apprenticeship system inaugurated at the beginning of the year. Two youths offered themselves

and were accepted. They have done exceptionally well during this their first year and are undoubtedly making good. The success of the plan judged by these first two cases, seems assured.

RETIREMENT OF HEAD GARDENER

Mr. J.G. Thomson, Head Gardener, retired from the service at the age of 70 years on superannuation on September 30th, after 21 years and four months as a member of the staff.

Having been associated with Mr. Thomson for 18 years I wish to bear testimony to his loyalty to the Board and to his faithful work as an official. He left behind him a record of which any man might well feel proud, and carried with him the good wishes of every member of the staff, which were conveyed to him publicly at a reception tendered him by your Board and the staff when suitable presentations were made him on their behalf.

Respectfully submitted,

J.S. Rawlings,
Superintendent,

December 31, 1929.

FINANCIAL REPORT

The following is a summary of receipts and expenditures for the year:

General Revenue Expenditure		$ 344,897.82
SPECIAL GRANTS		
Hadden Park	$ 2,500.00	
Earwig Eradication	4,991.51	
Beautifying School Grounds	8,559.48	
General Hospital Grounds	4,576.02	
City Hall Grounds	76.30	
Tree Planting in Cemeteries	718.87	
Purchase of Nursery Stock	769.20	
Sea Wall (Government Grant)	7,998.96	30,190.34
BOULEVARDS		
General Boulevards	9,250.00	
Tree Planting & Pruning on Boulevards .	3,007.81	12,257.81
UTILITIES		
Stanley Park Refreshment Pavilion and Second Beach Tea Rooms	47,204.86	
English Bay Bathhouses	7,301.42	
Kitsilano Bathhouse	5,468.52	
Second Beach Bathhouse	1,612.60	
Concessions	359.46	
Locarno Bathhouse	407.47	62,354.33
TENNIS COURTS & PUTTING GREENS		
Tennis Courts	4,595.95	
Putting Greens	486.84	5,082.79
IMPROVEMENTS		
By-law No.25 (Point Grey Balance)		
Maple Grove Park	506.31	
Braemar Park	18.55	
West Point Grey Park	1,485.63	
Memorial West Park	284.68	
Chaldecott Park	85.69	2,380.86
LAND PURCHASES		
By-law No.1564:		
Little Mountain (Portion of purchase price)	44,934.43	
By-law No.25 (Point Grey Balance)		
Lots 55 & 56, Block 66, D.L. 2027 ..	450.00	
By-law No.1990:		
Lots 8 - 10/184A/526 .... $ 2,763.19		
Lots 10 & 10A/129/540 ... 6,040.94		
Lot 11/129/540 ..... 7,020.50		
Lots 1-4; 10,11/130/540 . 17-20 Ex.Parcel A/131/540 23-38/131/540) 45,210.20		
Lots 10-11/131/540 ..... 18,041.80		
Lots 214-221/138-155/H.T.S. 21,000.00		
Advertising Charges 379.97	100,456.60	
By-law No.1991:		
Lots 9-10/53/185 ..... 49,582.46		
Advertising Charges 1,096.11	50,678.57	196,519.60
GRAND TOTAL EXPENDITURE		$ 653,683.55

Purchase Price $47,355.00
Legal Expenses 411.61
Expropriation Fees 2,227.46
Tens. services etc re Expropriation 684.50

	Brought forward	114,394.16
WESTMOUNT PARK:		
Payroll	$ 158.58	
Fertilizer	6.18	
Tools & Supplies	167.26	332.02
WEST POINT GREY PARK:		
Payroll	1,127.65	
Tractor (portion of cost)	465.00	
Insurance	4.50	
Maintenance of Mowers	40.29	
Tennis Courts(drainage)	280.26	
Fertilizer & Bulbs	37.75	
Tools & Supplies	101.82	
Improvements	367.49	2,424.76
WOODLAND PARK:		
Payroll	166.95	
Insurance	3.60	
Tools & Supplies	8.08	178.63
TRIANGLES, STREET INTERSECTIONS, ETC:		
General Payroll	195.12	
General Supplies	111.73	
Seed	12.25	
Grounds at Relief Office and Rotary Clinic	29.91	
Triangles at English Bay and Pacific Street	1,091.58	
Triangle at 4th Avenue & Granville	278.09	
Kingsway Triangles	68.72	
Street Ends (General)	40.41	
Trinity Street End	118.95	
Triangles, Hastings E. & Vernon Dr.	77.43	
Point Grey Triangles	1,533.14	
Kerrisdale Municipal Hall Grounds and Tennis Courts	725.09	
South Vancouver Municipal Hall Gds.	152.75	
City Hall Grounds	111.81	4,526.98
STANLEY PARK:		
Driveway:		
Payroll	5,927.24	
Snow Clearing	405.64	
Light & Fuel	119.22	
Tools & Supplies	7,617.72	
Fence at Ferguson's Point	81.68	
Fence at Brockton Point	361.80	
Relief Work (new roads)	85.59	14,598.89
Causeway:		
Payroll	1,953.80	
Fertilizer & Bulbs	753.91	
Light	384.16	
Mower Repairs	136.88	
Tools & Supplies	341.86	3,570.61
	Carried forward	$ 140,026.05

		Brought forward	271.258.29
CONTINGENT:			
Convention fees, civic entertainments, membership fees		252.00	
Board Luncheons		446.95	
Claims for Damages		2,808.25	
Presentation to Head Gardener		79.00	
Duplicating machine & supplies		515.60	
Xmas Trees - Victory Square		216.08	
Police Badges, etc.		134.20	
Cuts		39.58	
Park Sites:			
Little Mountain	78.75		
16th Avenue & Blenheim	36.00		
Grimmett Park	9.00		
Wall Street property	26.07		
South Vancouver Nursery	507.91		
		657.73	
Relief Work (54th Ave. & Knight)		179.34	
General Miscellaneous Items		340.49	
		5,669.22	
CREDIT: Squatter rents		69.00	5,600.22
SPECIAL APPROPRIATIONS:			
Bowling Green Area:			
Payroll		869.52	
Fertilizer & Seed		277.25	
New Tennis Courts (portion of cost)		199.06	
Tools & Supplies		348.17	1,694.00
New Bridle Trail:			
Payroll		852.68	
Tools & Supplies		57.50	
Relief Work		11.25	921.43
Sea Wall:			
Payroll		1,892.37	
Supplies		1,175.08	3,067.45
Service Yard Extensions:			
Harness Room		1,055.40	
Alterations		7,715.03	
Forestry		300.00	9,070.43
Old Elk Paddock Area:			
Payroll		2,341.23	
Seed		126.72	
Supplies		480.00	2,947.95
New Walk - Main Driveway:			
Payroll		1,060.99	
Supplies		736.14	1,797.13
Area between Driveway & Sea Wall:			
Payroll		1,068.88	
Supplies		352.60	1,420.88
		Carried forward	297,777.78

SPECIAL GRANTS

Hadden Park: (Grant from Mr. Harvey Hadden)			
Payroll		$ 2,350.92	
Tools & Supplies		149.08	2,500.00
Earwig Pest Eradication: (Grant from City Council)			
Campaign Manager's Salary		475.00	
Purchase of Automobile		939.15	
General Labor		1,157.66	
Advertising, Printing, etc.		71.00	
Supplies:			
Sodium Fluoride	596.81		
Bran	1,446.02		
Molasses	292.02		
		2,334.85	
Miscellaneous		13.85	4,991.51
Beautifying School Grounds: (Grant from School Board)			
Templeton Junior High School		3,847.90	
Queen Mary School		4,711.58	8,559.48
General Hospital Grounds: (Grant from Hospital Board)			
Payroll		3,069.52	
Materials		1,506.50	4,576.02
City Hall Grounds (Bulbs): (Grant from City Council)			76.30
Cemetery Planting: (Grant from City Health Dept.)			
Burnaby Cemetery		317.27	
Mountain View Cemetery		401.60	718.87
			$ 21,422.18

BOULEVARDS

Maintenance of Model Boulevards		833.46	
Boulevards surrounding Connaught Park		415.50	
Boulevards adjoining Clark Park		209.24	
Trees in Nursery prepared for planting out		259.38	
Chaldecott Nursery trees		99.00	
Spraying for Lecanium Scale		415.24	
Tree Planting		1,268.05	
Maintenance of new planting		391.47	
Pruning & Replacements:			
Point Grey District	1,897.27		
South Vancouver District	76.75		
Old City District	2,114.72		
		4,088.74	
Removal of trees		305.45	
Fertilizer		161.47	
General supplies (including trees & soil)		660.42	
General payroll - maintenance		142.58	
Carried forward		$ 9,250.00	

	Brought forward	9,250.00	
NURSERY STOCK: (Grant from City Council)			
	Purchase of trees from Essondale	769.20	
TREE PLANTING & PRUNING: (Grant from City Council)			
	Labor (including trucking)	1,783.34	
	Trees	702.00	
	Lumber for stakes	258.37	
	Stain	24.11	
	Rope, Marlin & cable	126.09	
	Saws, Shears & Pruners ...	88.74	
	Gauntlets	9.16	
	Photographs of trees	16.00	
		3,007.81	
			$ 13,027.01

I M P R O V E M E N T S

POINT GREY BY-LAWS (No. 25/1913)		
Braemar Park	18.55	
Chaldecott Park	85.69	
Maple Grove Park	506.31	
Memorial (West) Park	284.68	
West Point Grey Park	1,485.63	
		$ 2,380.86

APPENDIX 13.

Extract from the Minutes of the
Special Committee on Maintenance
and Operation of Boulevards 1929

FIRST REPORT OF THE SPECIAL COMMITTEE ON MAINTENANCE AND OPERATION OF BOULEVARDS.

A Meeting of the Special Committee on Maintenance and Operation of Boulevards was held on Tuesday, May 21, 1929, at 10 A.M.

Present:- Alderman Paton (Chairman)
" Loat
" DeGraves
His Worship the Mayor (W.H. Malkin)
Mr. Fred Crone, Chairman of Board of Park Commissioners.
Mr. A.G. Smith, Chairman of Vancouver Town Planning Commission.

- Committee

Also Mrs. Alice Townley and Messrs. E.G. Baynes and J.Fyfe Smith, Park Commissioners; Mr. W.S. Rawlings, Parks' Superintendent; Mr. J.A. Walker, Secretary of Vancouver Town Planning Commission.

The Chairman read to the meeting a memorandum prepared by the Parks' Superintendent on the subject of Boulevards and their maintenance and operation.

After which the matter was discussed very fully.

The following proposed recommendations to the Council were referred to the City Engineer and the City Solicitor for consideration and report to the next meeting of the Committee:-

1. That in future all boulevards be properly graded and planted on the local improvement plan at the same time as permanent sidewalks, pavements, curbs and gutters are being constructed; and that an irrigation system be included as part of the local improvement.

2. That when any streets are being graded to the permanent grade, boulevards be considered part of the operation.

3. That in the event of local improvement districts being created for the purpose of constructing or improving boulevards, a policy be adopted of including in a district those areas whose conditions are as equal as possible.

4. That the Council adopt a policy of general boulevard improvements on improved streets, paying the cost of construction out of general revenue or by-law funds, and assessing the cost of maintenance against the properties benefited, in accordance with the provisions of the City charter.

5. That in future where sidewalks are laid, even in cases where no curbs are installed, boulevards be built to the permanent grade to the approximate curb line and supported by wooden headers.

The Engineer was instructed to prepare and submit to the Committee a sketch plan of boulevards for different pavements and road widths.

It was arranged to hold another meeting on May 28th, at 10 A.M.

The Committee then Adjourned.

SECOND REPORT OF THE SPECIAL COMMITTEE ON
MAINTENANCE AND OPERATION OF BOULEVARDS.

A Meeting of the Special Committee on Maintenance and Operation of Boulevards was held on Tuesday, May 28, 1929, at 10 A.M.

Present: Alderman Paton (Chairman)
" Loat
" DeGraves
Mr.A.G.Smith, Chairman, Vancr. Town Planning Commission. - of the Committee

Also Mrs. Alice Townley and Messrs. E.G. Baynes and J.Fyfe Smith, Park Commissioners; Mr.W.S.Rawlings, Parks Superintendent; Mr. J.A. Walker, Secretary of Vancouver Town Planning Commission.

The Minutes of the previous meeting were adopted.

A letter of sympathy on the recent accident to his family was ordered to be sent to Mr. E.G. Baynes, of the Parks' Board.

Verbal reports were received from the City Engineer and the City Solicitor on the five proposed recommendations drawn up at the previous meeting for submission to the Council.

Mr. A.G. Smith submitted a tabulation prepared by him to illustrate the proposals.

The question of irrigation was referred back to the City Engineer for further consideration and report.

After considerable discussion the proposed recommendations were revised, two being eliminated altogether. Following are the proposed recommendations after revision:-

1. That the Council include in the general Local Improvement By-law provision for constructing boulevards as a local improvement; and that a policy be adopted whereby all sidewalk construction include boulevard construction, except in such instances or places where the City Engineer deems it impracticable or inadvisable to so include such boulevard work as part of the sidewalk construction or in cases where sidewalks have already been constructed the grading of the boulevard shall form a part of the cost where such grading is being done for permanent paving.

Also that the Council define standard types of boulevard construction as its policy applicable to local needs in the different sections of the City, the cost of maintenance to be provided under the Charter provisions regarding such maintenance, at an annual flat rate per front foot.

2. That wherever practicable or expedient when any streets are being graded to the permanent grade, boulevards be considered part of the operation.

3. That the Council adopt a policy of general boulevard improvements on improved streets, paying the cost of construction out of general revenue or by-law funds, and assessing the cost of maintenance against the properties benefited, in accordance with the provisions of the City charter.

These were referred to the City Engineer for written report to next meeting.

It was agreed to hold the next meeting at the call of the Chair.

The Committee then Adjourned.

MEMORANDUM RE BOULEVARDS SUBMITTED BY PARK SUPERINTENDENT

Improvements and Construction

The following alternative schemes are suggested as a basis in considering the question of the adoption of a definite policy for the construction and improvement of City boulevards:-

1. Local Improvement for actual construction including grading, soiling, seeding, planting trees or shrubs, and irrigation. It would seem that this represents the ideal scheme; its success depends upon the response of property owners in taking advantage of this opportunity. Unless petitions for improvements under this scheme were general little progress can be anticipated.

2. In the case of newly constructed streets, involving paving, sidewalks, curbs, etc., if it were possible to include the cost of grading, soiling, seeding, etc. under one operation and opportunity would be afforded to carry out extensive boulevard development. To follow up a Local Improvement for street and sidewalk construction with a second Local Improvement appeal for boulevard improvements does not appear likely to produce much response.

3. Following the construction of permanent sidewalk and curb the City to plant trees on a permanent basis, the cost to be charged to General Revenue Account.

Extensive planting under this scheme has been undertaken in the old Point Grey district, and with few exceptions this has been followed by the completion of the boulevard (soiling and seeding) by the property owner, without cost to the Municipality. In this way many miles of boulevards have been permanently constructed and maintained by the owner. To a lesser extent the experience has been similar within the old City boundaries.

4. The whole work of boulevarding to be carried out at the entire cost to the City from General Revenue, the City's efforts being directed at the outset to the newly developed districts, on paved streets with permanent sidewalks and curbs; later extending the work over the whole City.

5. As regards the older parts of the City, particularly the West End - the City to bear the entire expense of the removal of the existing trees (large soft-leave maple, etc.) which are unsuitable for boulevards, involving considerable annual upkeep costs, and to replace these with suitable trees planted on a permanent basis, anticipating that any improvement necessary to the actual boulevard will be carried out by the property owner.

Maintenance

The City has power under the Charter to maintain boulevards. This, of course, follows construction. Under by-law the City can levy a charge upon the property owner based on the actual cost of maintenance not, however, to exceed 25¢ per foot front.

1. In the event of the City deciding to maintain these boulevards throughout the City which may be deemed to be permanently improved and planted and which now, for the most part, are maintained by the owner, the first consideration would be that of installing water supply for irrigation. Under present conditions the property owner does this, but the City could not take their supply from private sources, so that of necessity a separate City service would have to be provided. For effective boulevard maintenance irrigation is an essential feature, and generally speaking no such facilities exist.

2. One of the chief drawbacks to the present system of maintenance by the property owner is that of the boulevard fronting vacant property which through lack of attention grows rank and wild, is an eyesore and a menace to adjoining properly maintained boulevards. To meet such cases the City would need to adopt a measure to enable them to improve and maintain. Under the maintenance levy system such cases would be covered.

3. At the present time the trees planted by the late Municipalities and the City on the permanent basis, numbering probably 80,000, are maintained by the Park Board by annual appropriation, the chief work being pruning. In the case of trees planted many years ago on a haphazard basis in the older parts of the City, particularly in the West End, all that the Park Board has attempted to do is to undertake the entire removal of those dead or dangerous, or removal of dead limbs or such portions as are so low as to cause obstruction to the public and which through neglect may result in a suit being brought against the City for personal injury or damage to vehicles. The cost of taking care of such work is either through special civic grant to the Park Board or through ordinary annual appropriation provided for in the Park Board Estimates. These trees, as a general rule, are of that variety of tree (native maple) entirely unsuited for boulevards. Permits are issued by the Park Board to property owners upon written request for the removal of such type of tree at the owner's expense, the City taking the view that such pruning or removal is requested and granted because of the improvement to the property by providing more light and air, and not for the general benefit of the public. A further work undertaken by the Board and provided for in the Annual Estimates is that of spraying this latter type of tree for lecanium scale or other infection.

The following provisions should be made in the future with a view to saving heavy and unnecessary expense in the development of boulevards. Previous to street paving water services should be laid up to the boulevard, this would obviate the costly work of opening up a paved street to make connection with the water main. In constructing the model boulevards in the City two years ago, this work represented one of the largest items of expense. In grading the boulevard following construction of curb and sidewalk, rock and rubbish should not be used unless at such depth as would not interfere with planting and seeding. Every effort should be made to have sufficient good soil on the surface to ensure successful seeding. One of the costly items of boulevard work in the past has been for the removal of rocks, rubbish and hardpan which have been used for making up the grade.

APPENDIX 14.

Detailed Information from 1929
Town Plan Report concerning Tree
Planting on City Streets

THE LOWER MAINLAND REGIONAL PLANNING BOARD

A

PLAN

FOR THE CITY OF

VANCOUVER

BRITISH COLUMBIA

INCLUDING

POINT GREY

AND

SOUTH VANCOUVER

AND

A GENERAL PLAN OF THE REGION

1929

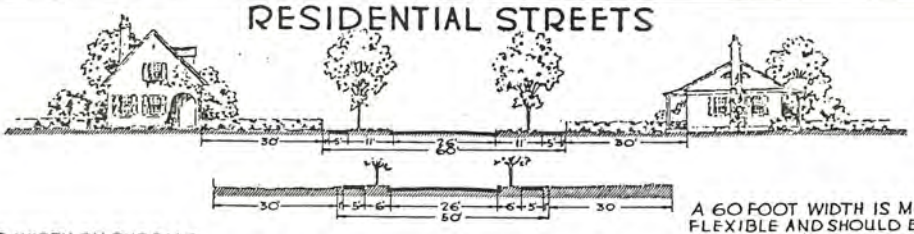
PRICE, $2.50

PROPOSED DEVELOPMENT OF MAJOR AND MINOR STREETS

GREATER VANCOUVER

HARLAND BARTHOLOMEW & ASSOCIATES TOWN PLANNING CONSULTANTS

RESIDENTIAL STREETS



EXTREME WIDTH ON PURELY LOCAL RESIDENTIAL STREETS IS UNNECESSARY EXCEPT FOR EFFECT.

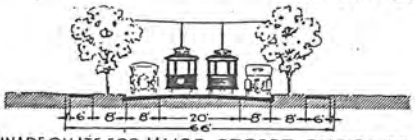
A 50 FOOT STREET SHOULD BE USED ONLY IN THOSE DISTRICTS WHERE NO MORE THAN 3 LINES OF VEHICLES WILL EVER BE NECESSARY.

A 60 FOOT WIDTH IS MORE FLEXIBLE AND SHOULD BE THE MINIMUM FOR MOST STREETS. ULTIMATELY IT COULD BE WIDENED TO ACCOMMODATE 4 LINES OF VEHICLES IF NECESSARY.

MAJOR STREETS

STREET AND ROADWAY WIDTHS SHOULD NOT BE ESTABLISHED ARBITRARILY. ROADWAY WIDTHS-THE DISTANCE BETWEEN CURB LINES-SHOULD BE BASED UPON THE NUMBER OF LINES OF VEHICLES THEY ARE TO ACCOMMODATE AND STREET WIDTHS-THE SPACE BETWEEN PROPERTY LINES-SHOULD BE DETERMINED BY THE WIDTH OF ROADWAY TOGETHER WITH PROVISION FOR AMPLE SIDE WALK SPACE. HERE ARE SHOWN TYPICAL EXAMPLES OF MODERN STREET DESIGN.

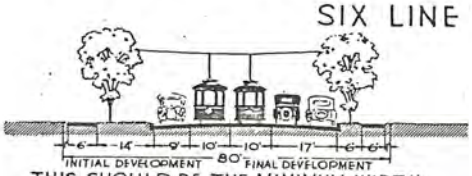
FOUR LINE THOROFARES



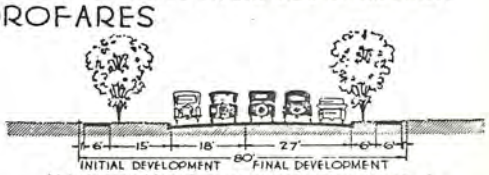
INADEQUATE FOR MAJOR STREET PURPOSES. THERE SHOULD BE ROADWAY SPACE FOR AT LEAST ONE FREE MOVING LINE OF VEHICLES ON EACH SIDE OF THE STREET. THIS IS NOT OBTAINABLE ON A 66 FOOT STREET WHICH CARRIES A CAR LINE

A 66 FOOT STREET IS THE MINIMUM WIDTH FOR A MAJOR STREET WITHOUT CAR LINES. WHERE ADDITIONAL VEHICULAR PARKING SPACE IS REQUIRED THE ROADWAY SPACE COULD BE INCREASED 6 FEET AND VEHICLES PARK AT AN ANGLE OF FORTY FIVE DEGREES ON ONE SIDE OF THE STREET.

SIX LINE THOROFARES

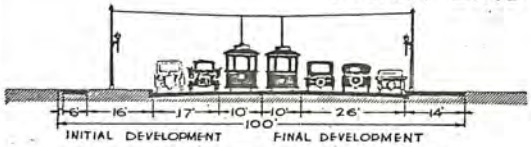


THIS SHOULD BE THE MINIMUM WIDTH FOR A MAJOR STREET CARRYING STREET CARS IN THE OUTLYING DISTRICTS. WHERE TRAFFIC IS LIGHT THE ROADWAY NEED NOT BE DEVELOPED TO ITS ULTIMATE WIDTH IN THE FIRST INSTANCE.

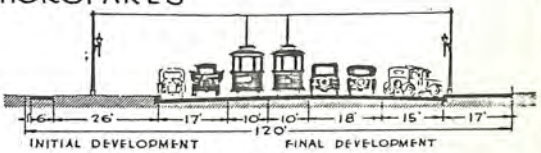


ALL NEW MAJOR STREETS SHOULD HAVE A MINIMUM WIDTH OF 80 FEET. THE STREET SHOULD BE DEVELOPED SO THAT IT CAN ULTIMATELY BE WIDENED TO A 6 LINE THOROFARE AND PUBLIC UTILITIES SHOULD BE INSTALLED IN ACCORDANCE WITH FINAL DEVELOPMENT.

EIGHT LINE THOROFARES



MAIN RADIAL THOROFARES WITH CAR LINES SHOULD HAVE A WIDTH OF 100 FEET. THIS WIDTH WILL ACCOMMODATE EIGHT LINES OF VEHICLES. A 100 FOOT STREET IS ALSO A DESIRABLE 6 LINE THOROFARE IN A RESIDENTIAL DISTRICT AS IT PROVIDES ADDITIONAL GRASS PLOT BETWEEN SIDEWALK AND CURB AND GIVES THE STREET MORE CHARACTER.



A 120 FOOT STREET WOULD ACCOMMODATE 6 FREE MOVING LINES OF VEHICLES AND ANGULAR PARKING AT EITHER SIDE OF THE STREET. SIDEWALK SPACE IS ALSO CONSIDERABLY INCREASED.

NOTE - FREE MOVING VEHICLES ARE SHOWN IN SOLID BLACK — PARKED VEHICLES ARE SHOWN BY OUTLINE.

STANDARDS FOR MODERN STREET DEVELOPMENT. (Chart 3).

A modern street system makes it possible for traffic to move safely and quickly to and from all parts of the city. This requires a complete scheme for circulation co-ordinating the present and future heavy duty streets, and while the exact arrangement of thoroughfares is necessarily different in every community, depending upon topographical conditions, there are certain fundamental characteristics applicable to all.

CONTINUITY AND DIRECTNESS.

Of the requisites essential to an effective major street, none is more important than continuity. Interruptions, such as jogs, dead ends and the like, retard the expeditious movement of vehicles and become serious traffic hazards. While nowadays distance is more often expressed in time required to travel than in actual mileage, yet in so far as topography permits, the main routes should be as direct as possible in order to accelerate traffic movements.

WIDTH.

The street width is the space between property lines, while the roadway includes the area between the curbs. Heretofore roadway widths, which limit the volume of vehicular traffic, have been established arbitrarily without relation to the number of lines of vehicles to be accommodated. Roadway widths should be based on the number of lines of traffic to be carried. In the case of major streets this should never be less than four lines and preferably six. As shown in Chart 3, these requirements are met by a 66-foot street with a 36-foot pavement, and preferably by an 80-foot street with a 54-foot pavement. Greater roadway widths can be determined by allowing on the average (including street car lines) 9 feet for each line of traffic to be planned for. Main thoroughfares should be at least 99 feet wide, with a 72-foot roadway.

PROPERLY DESIGNED ROADWAYS.

Minor streets and special service streets may have such widths as will satisfy the requirements of local traffic. If a special effort is made to place wide streets where they belong minor streets may be correspondingly reduced in width. To secure good appearance on a narrow street this can best be obtained by enforcing a building line that will keep houses back and permit the planting of trees along street lines. Minor streets of a residential character often need only a three-line roadway. The overall width of minor streets, however, should not be less than fifty (50) feet and preferably sixty (60) feet with a roadway width of from 24 to 27 feet.

EASY GRADIENTS AND CURVES.

Major streets should be designed and laid out so as to encourage their use, else they will fail of their purpose. Excessive grades or sharp turns in the alignment of the street will repel traffic and force it to take neighbouring minor streets not designed or paved to accommodate heavy traffic. Curb radii should be given more attention. The old standards of a three or six-foot radius, easily negotiated by horsedrawn vehicles, are traffic hazards today, as they throw the turning motor car, regardless of speed, out of its proper channel into the path of other moving vehicles, which confuses both motorist and pedestrian.

To meet the requirements of modern motor traffic, especially in Vancouver, where ice and snow conditions occasionally obtain, grades over 10% should be avoided, but short lengths with grades as great as 9% are to be preferred to long deviations. Grades up to 3% are practically disregarded, and 5% is a very desirable maximum grade. As a guide in estimating what is meant by these figures, it might be mentioned that the maximum grade between Fifteenth and Sixteenth Avenues on Granville Street is just over 7%.

Changes in alignment should be accomplished by curves of a radius of 500 feet or over if possible. For motor traffic curb radii should be from 20 to 25 feet, though the convenience of pedestrians should also be considered for crossings at street intersections. On wide streets safety islands should be provided at the centre for their convenience and safety.

STREET PAVEMENT.

A systematic paving programme based on the major street plan can be made a means of great economy. Much paving that is destroyed through the abuse of local streets can be saved by a properly designed system of major thoroughfares. If the surfacing of these heavily used streets is attractive and durable, there should be no reason for the shifting of traffic flow. Strictly local streets can then be improved with less expensive pavements.

The foregoing is a brief summary of the fundamental principles of modern street planning. It can readily be seen that a plan of streets suited to the traffic needs of the modern city can not be devised by hit or miss methods. The major streets constitute an organic, functional system. The topography, railroads, industries, arterial highways, transit routes and the character of the home districts must all be taken into account. Chart No. 3 illustrates typical street cross sections for modern street planning. In the light of these standards, the street system of the Burrard Peninsula is next examined to see how nearly it meets these requirements.

CONTOURS AND STREET GRADES.
(Plate 5).

The differences in elevation throughout the region that make for fine scenic effects render the study of the grades of streets most important. The plate shows some of the steeper grades, together with contours of fifty-foot intervals. A map has been prepared of the district showing ten-foot contour intervals, but it would be difficult to distinguish these contours if reproduced here.

Evidently replotting of streets is needed in several areas in the district. Already in Point Grey replotting has been successfully accomplished along the steep slope that exists between Trafalgar Street on the east and Sixteenth Avenue on the north, where there is a difference of some 100 feet in elevation. There has also been prepared, and to this further reference will subsequently be made, a scheme for replotting the north-east portion of Hastings Townsite at the Second Narrows. The map also shows other areas, such as Capitol Hill east of Hastings Townsite and certain portions of Burnaby Mountain, still further east and adjoining Barnet Road, that, to fit the contours, should be replotted.

The great need in New Westminster for planning is graphically represented by this study, which illustrates the numerous streets there of heavy grade. The need is, of course, for traffic entries to New Westminster with better grades.

STREET WIDTHS, JOGS AND DEAD ENDS.
(Plate 6, Page 42).

This map is presented to show *inter alia* some of the defects in street layout. The numerous dots indicate either street jogs or dead ends, many of which were unnecessary and represent poor planning.

Jogs are offsets in street alignment and naturally interrupt the direct flow of traffic. Dead ends necessitate traffic being forced either to the right, left or completely around. While these are not necessarily defects on minor streets where through traffic should be discouraged, they are objectionable on streets that are to be used as major streets. A list has been made of defects considered particularly objectionable and is set out later in this report.

It will be noted that the district is not without its wide streets, some of which are 132 feet in width, for example, portions of Boundary Road, King Edward and Sixteenth Avenues. But unfortunately all of the wide streets are not in locations in which they will be of most value to traffic needs. In some instances, particularly in Hastings Townsite, the wide streets are a disadvantage rather than an advantage and represent an unnecessarily large proportion of street area compared to lot area for what is largely a residential development.

In so far as possible, all existing wide streets have been incorporated in the Major Street Plan, as eighty (80) feet is the desirable minimum major street width, allowing for six lines of traffic; as before mentioned, the absolute minimum, though not recommended for such thoroughfares, is four lines of traffic.

There is a sharp distinction between major streets and minor streets; while main thoroughfares in particular should be of a commodious width of 80 or 100 feet or more, and should provide for uninterrupted flow of traffic, minor streets, especially in residential districts, should be designed to discourage anything but local traffic. Nearly all minor streets in Vancouver are 66 feet wide and are of ample width. It might be noted that there is a greater mileage of minor streets of excessive than of inadequate width.

MAJOR STREETS.
(Plate 7, Page 44).

ARTERIAL HIGHWAYS, REGIONAL.

In the design of a street system there are three types of streets that every well-planned city should have:

Arterial highways or main thoroughfares.
Secondary streets or cross thoroughfares.
Minor streets.

The first two types are classed as major streets. Plate 6 shows the main thoroughfares or arterial highways alone. In a subsequent plate the combination of main and secondary thoroughfares constituting the Major Street Plan is shown.

The main thoroughfares within the city limits are better described as arterial highways outside the city limits. They not only provide continuous and direct communication between the central business district and all parts of the city, but they also link up the surrounding areas. Diagramatically they have been considered as the spokes in a wheel radiating in all directions from the hub.

PLEASURE DRIVES.

The growing use of the automobile is focusing the attention of cities more and more upon the need of a system of parkways and formal boulevards.

The motor car is a pleasure-giving device of extraordinary value. In every month there are millions of hours spent by people of all classes, just riding, riding for pleasure. There is fascination in a changing picture such as one gets from the window of a smooth-running motor car. The same thousands who provide daily support for the motion pictures are equally devoted to riding in leisure hours here and there in an automobile. Few families today are without a car, and, regardless of economic conditions, they manage to ride.

This riding, however, is rarely aimless. There is generally a desire to go over some particular route or to some special objectives. The parks in Vancouver, the University, Grouse Mountain are such objectives. The principal pleasure routes are Marine Drive, Douglas Road, Kingsway and the routes through Stanley Park. Marine Drive is one of the outstanding features of the region, a pleasure route of which all Canada can rightly be proud. As time goes on, it can be made second to none on the continent.

Vancouver lacks, however, a continuous chain of pleasure drives developed for the primary purpose of accommodating the increasing thousands of vehicles driven for pleasure. It is time the city considered giving those who find great enjoyment in these leisure-time and holiday tours a special route touching many of the larger parks and having qualities not possessed by ordinary city streets. The basic framework of such a system is already available. With little effort, except consistent progressive execution of a general plan, the city can secure many miles of pleasure drives of great merit.

The routes proposed are shown upon Plate 47, page 200. Briefly, the routes may be analyzed as follows:

1. Around the City Boulevard, commencing at Granville and Georgia, thence over Georgia to Stanley Park, around the water's edge, along English Bay, across False Creek by a new Burrard Street Bridge, along the south shore of the Bay (all structures between drive and waterfront to be cleaned out in time), around the Marine Drive to New Westminster, across to Burnaby Mountain, and along the shores of the Inlet to Hastings Park, from which point the major street system will serve to carry one back into the business district.

2. A CENTRAL PARKWAY along a route bisecting the city longitudinally, from the University via King Edward Avenue (132 feet wide) to Trout Lake, thence along Still Creek to and around Burnaby Lake and via a parkway of varying width along the Brunette River to New Westminster.

3. CROSS CITY BOULEVARDS.

   (*a*) From the shores of English Bay via Waterloo Street and the replotted lands in Point Grey and Yew Street to Marine Drive.

   (*b*) From the intersection of Granville and Georgia via Cambie Street south to Little Mountain Park, thence southerly through the at present unsubdivided C.P.R. Lands to Ash Street and Marine Drive.

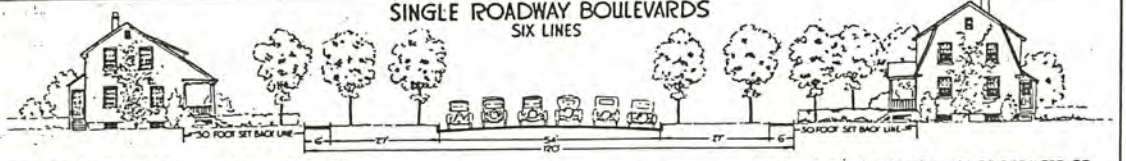
   (*c*) Follows Victoria Drive from Burrard Inlet in a southerly direction to connect with the Central Parkway at Trout Lake and Nanaimo Street southerly to Marine Drive.

SCALE OF CROSS SECTIONS
10 5 0 5 10 15 20 25 30
ONE INCH EQUALS TEN FEET.
1922

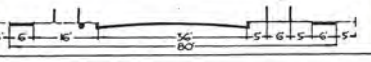
SUGGESTED CROSS SECTIONS OF PLEASURE DRIVES - VANCOUVER - B. C.-

HARLAND BARTHOLOMEW
CITY PLAN ENGINEER

SINGLE ROADWAY BOULEVARDS
SIX LINES



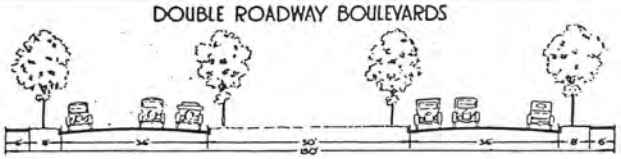
A BUILDING SET BACK OF 30 FEET OR MORE ADDS GREATLY TO THE DIGNITY OF THE STREET - PROPER TREE PLANTING WILL GIVE IT CHARACTER.



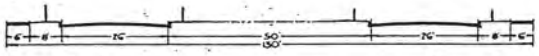
THE FOUR LINE BOULEVARD CAN BE REDUCED TO A MINIMUM OF 80 FEET IF NECESSARY BUT THIS WIDTH DOES NOT PROVIDE FOR A FIRST-CLASS TREE PLANTING

DOUBLE ROADWAY BOULEVARDS

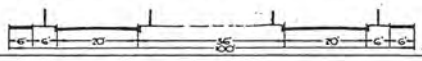
EIGHT LINES



SIX LINES



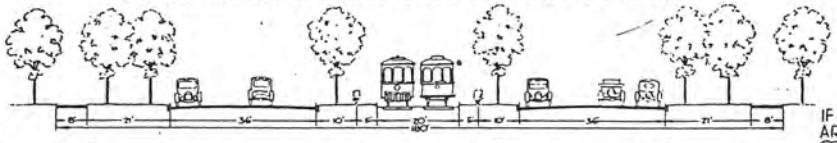
FOUR LINES



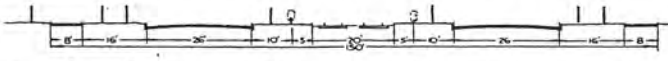
THE CENTER STRIP OF DOUBLE ROADWAY BOULEVARDS SHOULD BE GENEROUS. A THOROUGHFARE OF THIS TYPE SHOULD NOT BE LESS THAN 100 FEET WIDE.

DOUBLE ROADWAY BOULEVARDS WITH STREET CAR LINE

EIGHT LINES



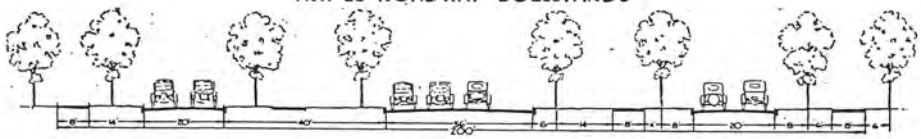
SIX LINES



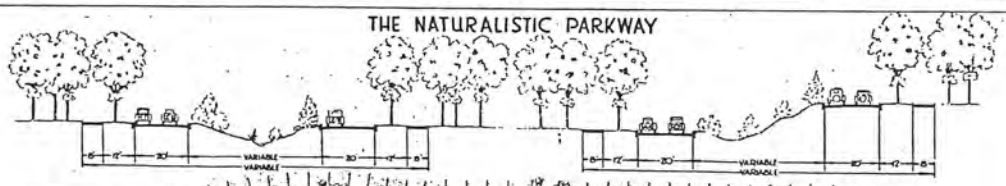
SIX LINES

IF STREET CARS ARE TO BE ACCOMODATED ON A DOUBLE ROADWAY BOULEVARD THEY SHOULD BE IN THE CENTER STRIP AND OBSCURED BY PLANTING

TRIPLE ROADWAY BOULEVARDS



THE NATURALISTIC PARKWAY



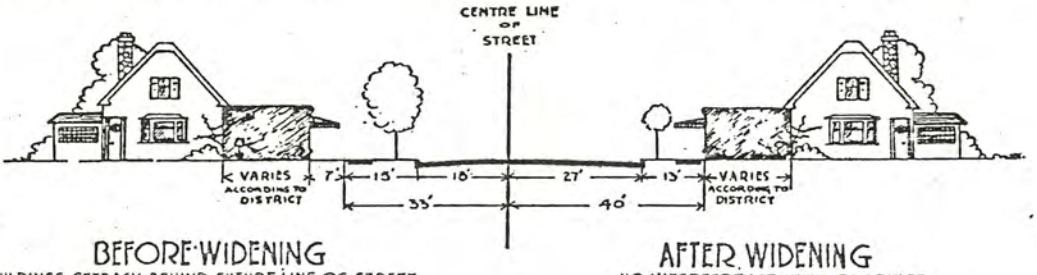
NOTE ARRANGEMENT OF LOTS TO TAKE ADVANTAGE OF PARKWAY.

LOTS SHOULD ALL FACE PARKWAY AT RIGHT ANGLES TO STREET LINE.

FUTURE STREET WIDENING BY PRESENT BUILDING LINE

VANCOUVER
BRITISH COLUMBIA

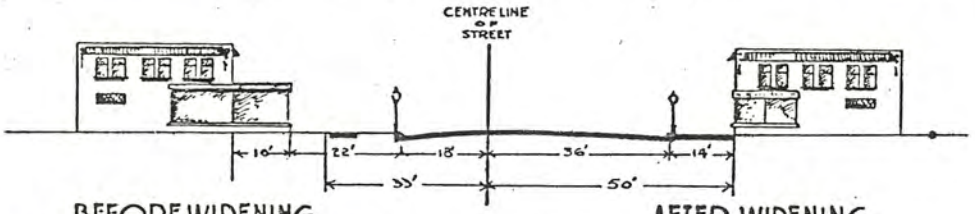
(A) WIDENING FROM 66 TO 80 FEET
STREETS WITH LESS THAN 10% DEVELOPED FRONTAGE INTERFERING WITH WIDENING



BEFORE WIDENING
BUILDINGS SETBACK BEHIND FUTURE LINE OF STREET

AFTER WIDENING
NO INTERFERENCE WITH BUILDINGS

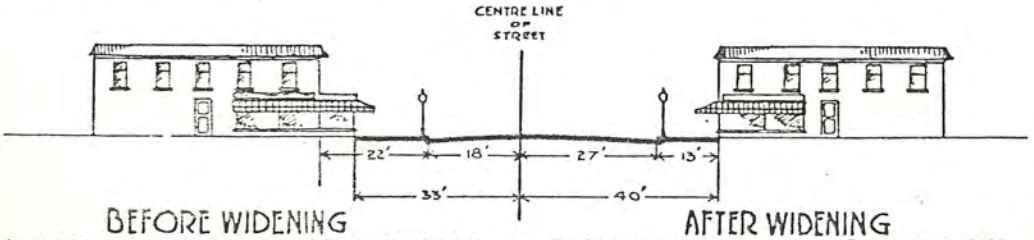
(B) WIDENING FROM 66 TO 100 FEET
STREETS WITH LESS THAN 10% DEVELOPED FRONTAGE INTERFERING WITH WIDENING



BEFORE WIDENING
MAIN PORTION OF BUILDING SETBACK TO THE FUTURE LINE OF STREET WITH TEMPORARY ONE STOREY PROJECTION TO 40 FOOT LINE

AFTER WIDENING
TEMPORARY PROJECTIONS REMOVED & STREET WIDENED WITHOUT INTERFERENCE WITH MAIN PORTION OF BUILDING

(C) WIDENING FROM 66 TO 80 OR 100 FEET
STREETS WITH MORE THAN 10% DEVELOPED FRONTAGE INTERFERING WITH WIDENING



BEFORE WIDENING
MAIN PORTION OF BUILDING SETBACK TO THE FUTURE LINE OF STREET LINE

AFTER WIDENING
TEMPORARY PROJECTIONS REMOVED & STREET WIDENED WITHOUT INTERFERENCE WITH MAIN PORTION OF BUILDING

VANCOUVER TOWN PLANNING COMMISSION
1928

HARLAND BARTHOLOMEW & ASSOCIATES
TOWN PLANNING CONSULTANTS

CIVIC ART

Civic Art embraces the sites and settings of public and semi-public buildings, sites for monuments, the architectural treatment of the facades of stores and commercial buildings, and of factories; street design, street lighting and street control in general, which includes the regulating of overhead wiring and other objectionable fixtures. All these were dealt with in the Vancouver Report, and, in addition, suggestions for the improvement of home grounds were detailed. As the South Vancouver Area is largely of a residential character, these suggestions should be of interest.

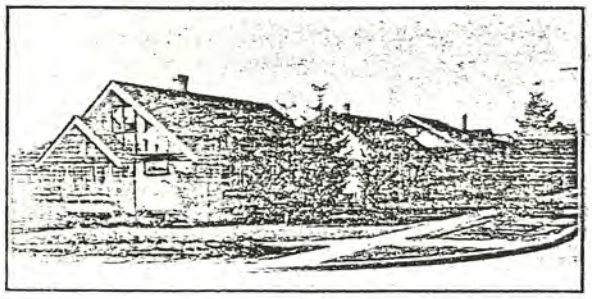
Owing to the new development which is yet to take place in the area, there is a splendid opportunity to observe and carry out the recommendations to improve the various elements as the occasion arises. When new streets are opened up, the policy relating to boulevards could be carried out to advantage. In respect to street planting, the city has now reached such proportions in its growth that the appointment of a trained technical man as a City Forester should be made.

Strategic locations as on the triangles created by diagonals are very appropriate for sites for monuments. Such corners as at Kingsway and School Road, and at Marine Drive and the proposed new diagonal streets, are particularly fitting for monumental sites.

In the elimination of the jogs referred to in the Major Street Report, there is a splendid opportunity to create a pleasing environment, especially in the local commercial centres. These open spaces, well planted and landscaped, will greatly offset any undesirable features of commercialism in residential neighborhoods. The illustration will show what may be done in this respect.

STREET DESIGN.

If the ways and means by which more agreeable surroundings may be produced are analyzed, it will be found that an attractive city depends largely on (1) attractive streets, and (2) attractive buildings and grounds, parks and other open spaces, namely, whatever is seen from the streets. The appearance of the streets themselves and of the parks and other open spaces is largely in the hands of the city government or subject to their guidance. The appearance of buildings and grounds, on the other hand, is partly in public, but largely in private, control. This classification is arbitrary and of use only for the purpose of analyzing the subject under discussion. The aim of this phase of the town plan is to formulate a programme for the improvement of the looks of Vancouver.



Boulevard Planting.

The design of streets has a notable bearing upon the city's appearance. A narrow street where a wide one belongs is obviously a mistake. A broad expanse of pavement on a purely local residential street robs the neighbourhood of the restful, homelike character that appeals to the average home-owner. The proper proportioning of streets so that roadways will be wide enough on major streets, and all grass and tree space will not be absorbed by pavement on residential streets, is a matter which can now be controlled by adherence to a functional street plan.

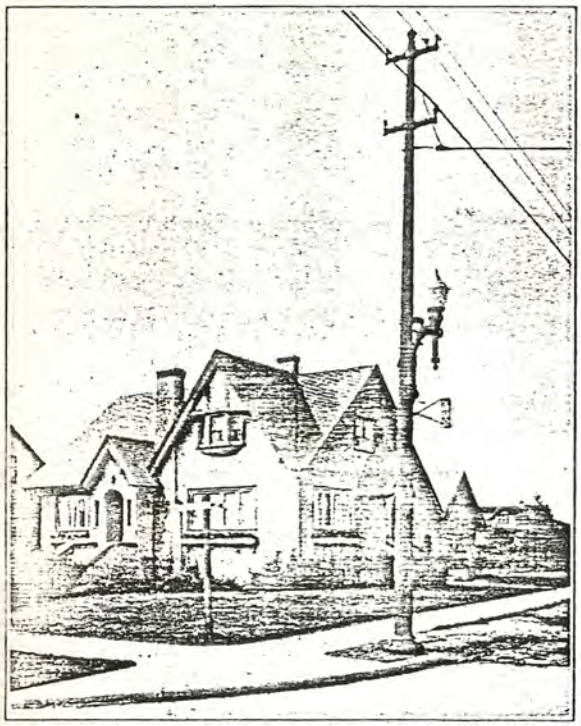
STREETS, CURVES AND CURBS.

Street intersections also deserve notice. Where two streets intersect at a sharp angle, the corner should be well rounded. A radius of from twenty to twenty-five feet at the curb line is needed for this purpose. This may mean putting a curve on the property line at the corner, a plan to be followed generally when new subdivisions are laid out. The object is mainly safety, but appearance gains, too. Sharp curb corners at present spoil the looks of many streets in Vancouver.

Sometimes, where more than two streets intersect at or near the same point, or where a slight jog occurs in one of two intersecting streets, carefully enlarging the intersection will make it safer and at the same time much more interesting and attractive. Forethought exercised when land is subdivided results usually not only in added safety and attractiveness for the public, but better property values adjacent to the corner which is given individual treatment.

Street alignment, too, is worthy of note in this connection. This really goes back again to the subdivision of the land. In Vancouver, wherever it has been necessary to change the direction of a street, it has been customary in the past to introduce an angle in the street, taking up all the change of direction at one point. Far more street attractiveness, as well as better shaped lots and greater traffic safety, would usually have been produced in residential sections if long radius curves had been used in place of angles.

When parkways or boulevards are laid out, special interest in the street view may be secured without expense by the deliberate introduction of occasional long curves, even where the contour of the land does not demand a change of direction. Such curves are



A Pole Designed to Carry Street Lighting Fixture and Power Wires, as Well as Acting as a Support for Street Railway Wiring.

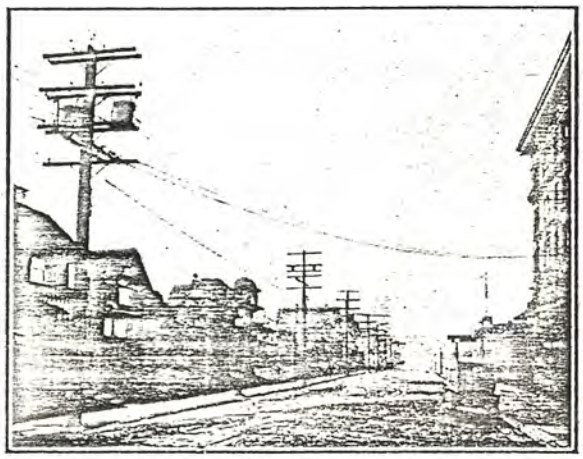
more adapted to the flow of motors, and are consequently more satisfying than angles. Though already used to fine effect in numerous subdivisions outside the city, there are still wonderful possibilities in the use of curved streets for local residential use. On hilly land they are absolutely necessary as a practical matter; on land less rough, curved streets here and there throughout the city undoubtedly increase its attractiveness.

POLES, WIRES, LIGHTS, ETC.

It is not within the scope of this report to consider in detail all the items mentioned under this sub-heading. But they are matters that should be carefully considered by the various civic departments. While the location of poles and wires on the city streets is under franchise arrangement and not entirely under control of the city, every endeavour should be made to forward their ultimate removal. The effect of beautiful buildings and well-planted boulevards is in a great measure nullified by these ungainly and unsightly erections, as a reference to nearly every illustration in this report will clearly show. Where it is impossible to place wires underground, they should be located along lanes or easements.

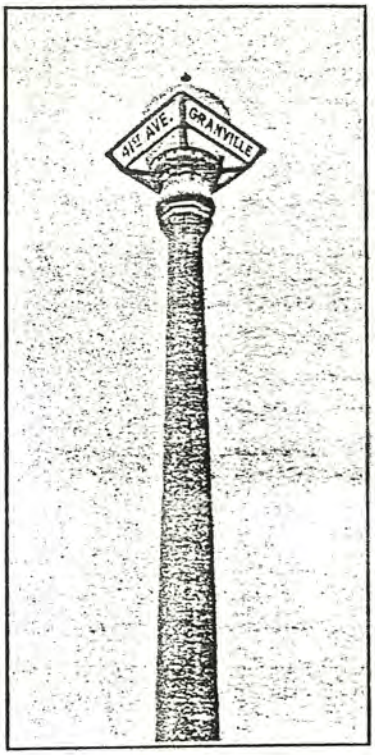
Street lighting has, in the past few years, received a great deal of attention, and methods of lighting and design of standards leave but little to be desired. Vancouver has made some progress in modern street lighting in recent years. The work of lighting all the major thoroughfares should go on as rapidly as possible. On car line streets steps should be taken to combine the light standards and trolley wire supports in one fixture so as to eliminate one set of poles.

In the past a great deal of complaint has been made as to street signs in Vancouver and vicinity. With the coming into being of the new city, there will be needed a certain amount of renaming of streets.



Disfiguring Poles at the Beach Avenue Entrance to Stanley Park.

As pointed out by Mr. Walter Deptford, a member of the Town Planning Commission, the same name has been repeated as many as five times in the City of Vancouver and adjoining municipalities to designate different streets. Those streets that are numbered are frequently designated by different numbers in different municipalities, for example, Forty-first Avenue in Point Grey becomes Forty-third in South Vancouver, and eventually Forty-second. When these anomalies have been rectified, the question of street signs should then be given serious attention. The accompanying photograph shows the latest street signs in connection with the street lighting system as used in Point Grey, a type found to be very satisfactory.



Ornamental Lighting.

SIDEWALKS IN RESIDENTIAL DISTRICTS.

The placing of sidewalks at the curb on residential streets is not good planning, though it has already been done in Vancouver at the request of interested owners. This practice is dangerous to children playing on the sidewalk who may unintentionally step off the walk in front of an approaching automobile; it allows the pedestrian in rainy weather to be splashed by a passing vehicle, and does not permit of an ample planting strip, that, for appearances, should be provided, not only for grass and trees, but in a climate such as Vancouver enjoys, for flowers as well.

STREET CONTROL.

Sidewalk Obstruction.

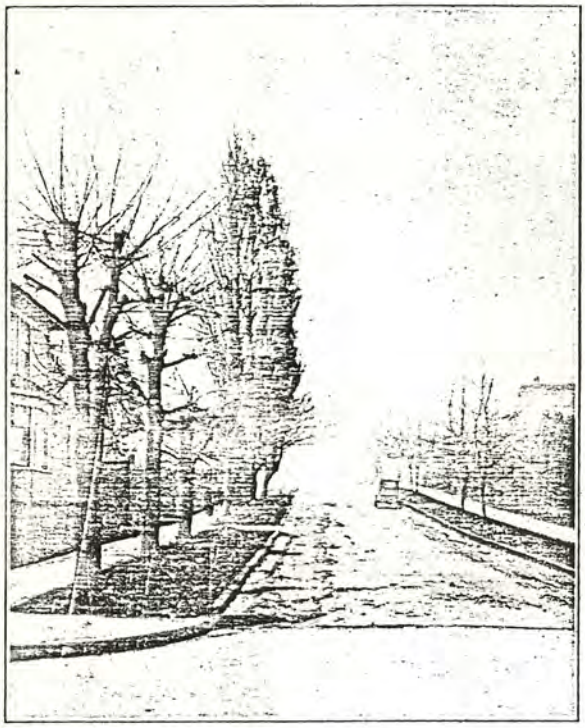
From the standpoint of the pedestrian's rights, and also for the sake of appearance, sidewalks should be free from obstructions. Loading and unloading of goods temporarily on the sidewalk is usually not very objectionable. The use of sidewalk space for storage or for showcases or advertising matters calls for police action. Vancouver is fortunately free from the gasoline curb pump, an obstruction to both pedestrian and vehicular traffic.

Overhanging Signs.

It is understood that in Vancouver the only overhanging signs permitted are those that are electrically illuminated, though the further control as to the size and amount of projections might be desirable.

Billboards.

Under the zoning by-law, no billboards are permitted in residential districts. Further control in other districts might be advisable, but the billboard companies cannot be expected to co-operate in such matters as long as building owners permit signs to cover great wall spaces.



Bad Boulevard Planting.
The Result of Individual Efforts, Without System.

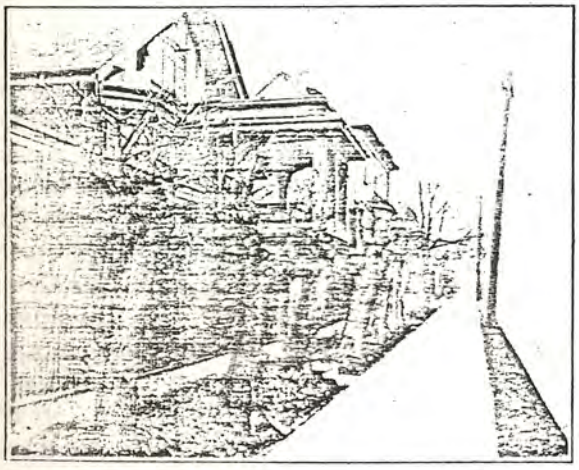
STREET PLANTING DESERVES THOROUGH CONSIDERATION.

RESIDENTIAL STREETS.

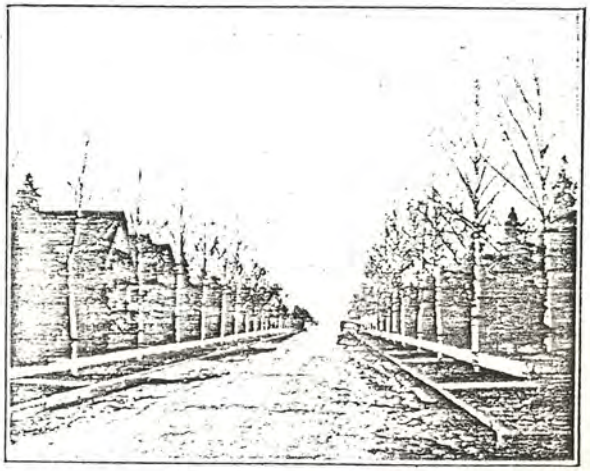
For years the Parks Board has urged systematic planting on residential streets. In 1909, trees suitable for street planting were purchased in England, several thousand young seedling stock being planted in the Stanley Park nursery. The trees were ready for street planting before any scheme was worked out and considerable loss of trees resulted and no uniform scheme of planting in any block was made effective, though citizens were supplied with trees without any charge.

Charter powers for the City of Vancouver have been obtained to regulate the operation and maintenance of "boulevards" under a frontage tax, but no action has been taken by the Council, though again in 1920 the Parks Board purchased 5,000 trees, and these trees were ready for planting two years ago and certain blocks in the city were planted as a trial demonstration.

In the early days tree planting was carried out by interested citizens, but without regulation or scheme. Unsuitable and varying types of trees, poorly spaced and arranged, have resulted in the present more or less undesirable appearance of streets where planting exists, and has also resulted in very considerable inconvenience, as outlined in a report by Mr. W. S. Rawlings, Superintendent of the Parks Board, under date of 8th January, 1926.



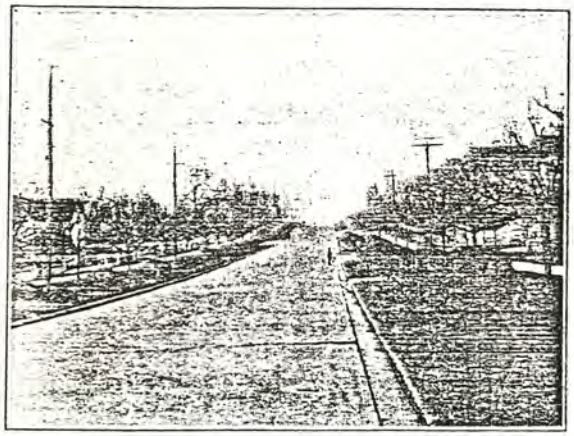
Bad Street Planting.



Good Street Planting.

Mr. Rawlings draws attention to the system in vogue in Victoria, and states:

"Probably the finest example of systematic boulevarding in Canada is to be seen in Victoria, and it is doubtful if it can be excelled on the American Continent. Those interested in this method of city beautification would be well repaid if they paid a visit to Victoria and made a tour of the city and residential districts.



Street Planting, Victoria, B.C.

"This system has been in force for a number of years now. I understand criticism had to be faced at the outset in regard to the clean sweep that had to be made ere a permanent planting scheme could be put into operation. That the policy was a wise and proper one none today can doubt. The construction work, including planting and seeding, was carried out under the local improvement plan and maintenance costs are chargeable under a frontage tax, similar to the powers which we have in our charter.

"Another excellent example of systematic boulevarding is at Winnipeg, where the frontage tax for maintenance is in operation. At Calgary, under very difficult and adverse conditions, their well-planned and neatly maintained boulevards are a credit to the city.

"If a policy for the definite and permanent boulevarding and planting were laid down and carried out, in a few years hence we would have a system which would not be excelled anywhere in Canada. The evidence for this statement is what can be seen today in Victoria."

Undoubtedly a scheme similar to that in Victoria should be established in Vancouver and a by-law to accomplish this is now being considered.

Approach to Stanley Park.

Particular attention should be given to the planting on Georgia Street from Granville westerly to the Stanley Park entrance. This street should either be planted uniformly throughout, or all trees removed and shrubs established between sidewalk and curb. This street is too important to be allowed to remain long in its present state. It needs a uniform treatment.

The entrance to Stanley Park could be considerably improved as to convenience and appearance by providing a pedestrian tunnel under Georgia Street and marking by planting the development to the east of the entrance, by removing buildings on the Lagoon in the vicinity of Georgia Street, and, if necessary, by building suitable structures further south of the Lagoon.

Coal Harbour, in its present state, is a serious disfigurement of Stanley Park, and every opportunity should be taken to acquire property on the north side of Georgia Street as far east as the Auditorium. It would greatly change the view from within the park if the private structure on the axis of the bridge at the corner of Georgia and Chilco could be redesigned with a lower or more satisfactory exterior, or removed entirely. The park suffers from these bordering structures.

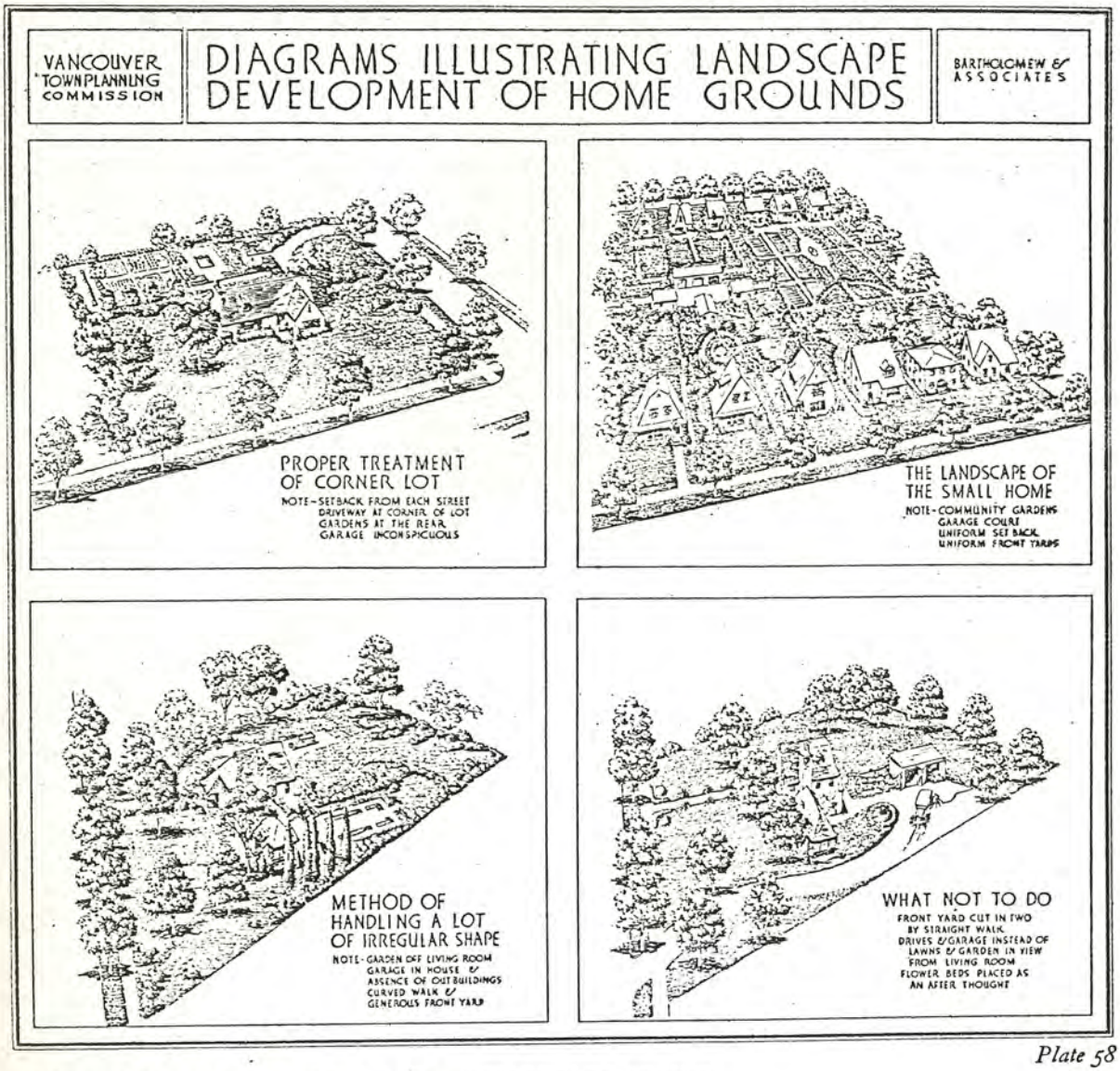


Plate 58

HOME GROUNDS CAN BE GREATLY IMPROVED. (Plate 58).

1. HOMES.

Observations have been made regarding some of the ways in which both private individuals and public authorities have it in their power to contribute appreciably to the attractiveness of the city. Nothing has yet been said about the private home. Probably no single factor is of greater importance in this respect. The great bulk of the city's area is devoted to private dwellings. The individual responsibility of each home-owner in producing and maintaining an attractive city is at once apparent.

The mixture of architectural types and styles, and the haphazard placing of buildings of all sizes along the same street, is responsible for the disturbing effect found on some streets of Vancouver. This is a matter that is subject to no control other than public taste. Where each individual develops his own property, he naturally does that which appeals

to him. Through education a gradual improvement of public taste should certainly be sought. What Vancouver needs is an agreement as to a style of building that is at once aesthetically pleasing and adapted to local climatic conditions. The half-timber house should be studied and advocated by the local architects, for it seems to be appropriate to these surroundings.

The zoning by-law is of some help in preventing serious jumbling of building types. Under its provisions certain districts are being developed only with one-family and two-family houses; no apartments, boarding houses and so on are permitted. Furthermore, only buildings of two and a-half storeys or less in height are permitted in such districts. Front yard lines are being enforced in all residence zones, thereby assuring observance of the desire of the majority of home-owners who prefer to have attractive front yards. These provisions are all based on protection of health and property values, but their effect in improving the city's appearance is evident.

Provisions of the zoning by-law will prevent the erection, under ordinary conditions, of garages or other similar buildings near the street line. Ordinarily, these will be placed at least 60 feet back from the street line. Suitable provision is also made for corner sites, so that appearances need not be sacrificed.

2. PLANTING.

In addition to producing a smooth, weedless lawn, the average home-owner wishes to dress up his house and yard with shrubs, flowers, vines and trees. If all the homes Vancouver that are bare of planting were to have a bit of attention along this line, the city would assume a vastly improved appearance. Almost any kind of planting is better than none at all, but of course there are good and poor ways of arranging the plant material.

This is far too big a subject to attempt to discuss in any detail in a report. An abundance of information is available elsewhere for those who seek it. It may be helpful, however, to list briefly a few of the fundamentals, the observance of which is essential to successful planting of the home grounds:

1. Keep shrubs along border of yard and against foundation of house. The homes of Vancouver suffer severely from lack of foundation planting in scale with the house.
2. Avoid use of round flower beds in lawns, hot water tank flower boxes, rubber tire effects and other freakish displays.
3. Make sure that plants placed in the shade are the right sort to grow there. Some plants thrive in the shade, others dwindle and die.
4. Hedges are meant to serve as walls or fences. A hedge-like row of shrubs of the same kind and the same height planted around a front porch or along a house wall produces monotony.
5. In planting against a porch or against the house itself, let certain portions of the foundation remain open to view practically to the ground. Vary the heights of shrubs, placing more shrubs and taller-growing ones at the corners and leading away with lower-growing ones. A tall house needs tall shrubs. Flowers belong in outer borders.

6. Some shrubs and trees make good "specimens," that is, they have interesting forms and can be used to advantage singly to produce special effects. Most narrow-leaved evergreens belong to this class. Never spot up a lawn with such plants, however, and never plant a row of them around a house. Use them sparingly and rely on mass planting of shrubs in most places.

7. Every lot should have one or two shade trees. If there is a street tree close to the lot and the lot is small, it may not be best to provide another tree at the front of the house. When possible, arrange for the trees to enframe the house when seen from the street. It will improve the effect.

8. Find a sunny place along the walk or foundation for the flower bed. A lawn looks best when left open for as broad a space as possible. Flowers look well backed up by the green of shrubbery.

9. One or two vines should climb the porch or the side of the house. It is unnecessary to plant many vines.

10. It will pay to plan the planting layout for the lot on paper or have it done for you before doing the actual planting. Relatively few plants are needed to improve a small lot 100 per cent. in appearance, and a plan will make it possible to arrange these to the best effect.

3. Vacant Lots.

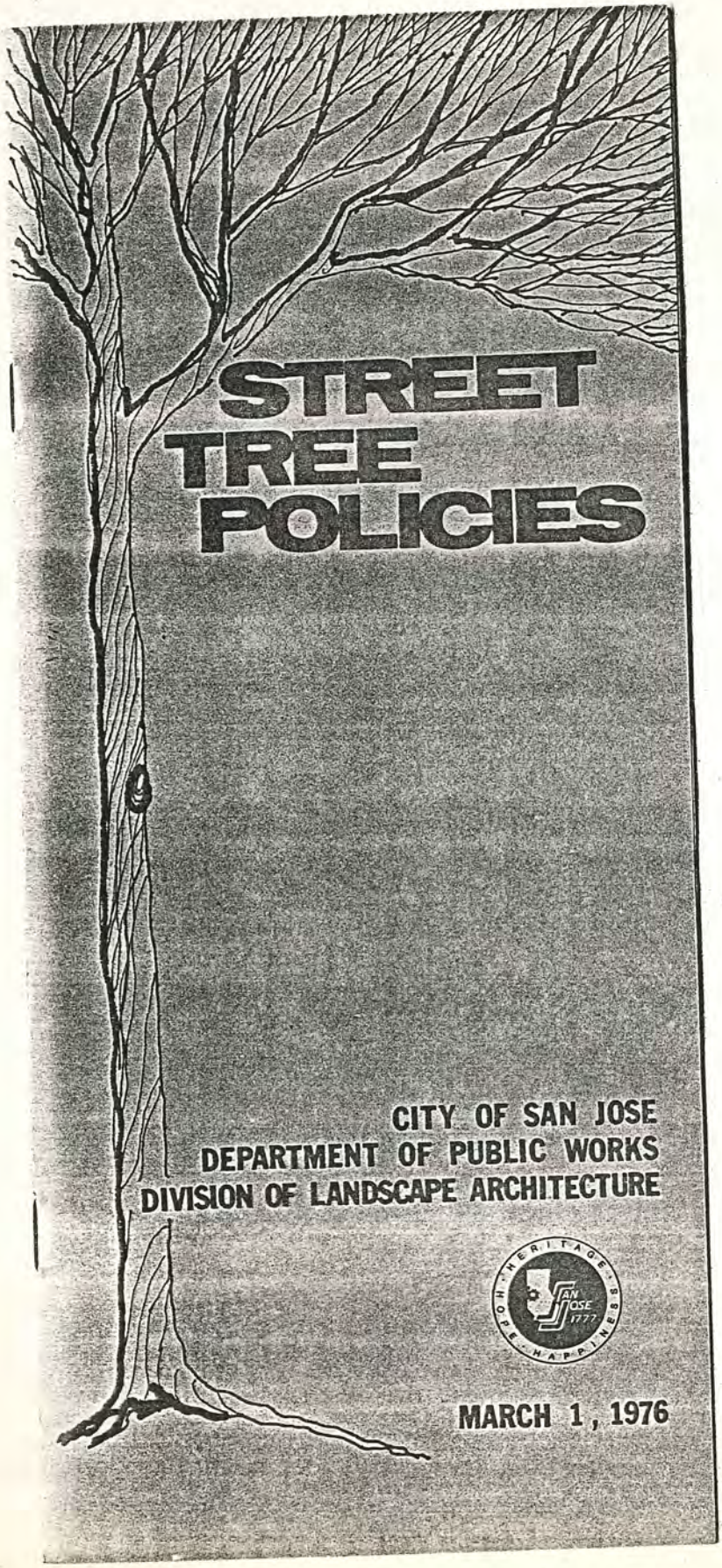
Vacant lots are scattered more or less through every city. There is a tendency for these spots to be neglected by their owners, who often live at a distance from the city, and who, perhaps, have no agent to assume responsibility for their upkeep. The care of vacant lots constitutes an important factor in the city's appearance. Citizens should co-operate to discourage all attempts to use these vacant areas as community waste baskets for the piling up of paper, tin cans, bottles and other refuse.

CONCLUSION.

If a town plan is to be really effective, it needs the co-operation of every citizen as well as of the civic officials. The object of this particular civic art report is to show in some detail how the city's appearance can be improved through the aid of each citizen by keeping home grounds attractive and urging that other matters mentioned in this report should be thoughtfully considered by civic officials. By supporting measures and methods for making a more efficient city, as well as for increasing the city's attractiveness, and also by direct assistance as individuals in improving the appearance of the particular property which they happen to own, the people of Vancouver can gradually make their streets, parks, buildings and grounds so attractive that their city will be second to none in appearance.

APPENDIX 15.

Example Street Tree Policies Adopted by the City of San Jose


STREET
TREE
POLICIES
CITY OF SAN JOSE
DEPARTMENT OF PUBLIC WORKS
DIVISION OF LANDSCAPE ARCHITECTURE
HERITAGE
SAN JOSE
1777
PEOPLE · HAPPINESS
MARCH 1, 1976

Street trees are on public property adjacent to City Streets and are a part of the public facilities of the City of San Jose. The tree is generally located in the parkstrip, that is, between the curb and sidewalk; however, in areas where no park strip exists the street tree may be placed three to four feet behind the sidewalk. The San Jose Municipal Code requires that a street tree be planted in front of each new family residence in San Jose and in front of industrial and commercial establishments as determined by the City's site review process.

The following is a list of various street tree maintenance activities indicating the services provided by the City Department of Public Works. Also provided is information on what the property owner may do, or is obligated to do to help the Department of Public Works maintain and enhance our urban forest. A permit is required for some work in the public right-of-way. There is no charge for permits.

I. Tree Trimming

A. City Services

The City trims street trees as required for visibility of traffic control signs and for pedestrian and vehicle clearance. The City also does a limited amount of pruning of street trees for structural development. Structural pruning and a majority of clearance trimming is done according to schedules set by an annual City-wide survey of needs.

B. Property Owner

The property owner may trim the street tree in front of his home after obtaining a permit from the Department of Public Works. Permits may be obtained by calling 277-4531.

II. Hazardous Conditions

A. City Services

The City of San Jose will respond twenty-four hours a day to hazardous conditions in the public right-of-way which include storm damage, fallen trees, or cracked and hanging limbs. City crews will provide any emergency service required to clear the public right-of-way and remove any hazard to the public. This service may be obtained by telephoning 277-4373

B. Property Owner

The San Jose Municipal Code provides that the property owner is responsible for maintaining trees and shrubs on his private property and adjoining public property in a condition that does not pose a hazard to the public right-of-way. If removal of the hazard does not fall within the work performed by the Public Works Department, the City Engineer is obligated to notify the property owner to remove the hazard.

. If the property owner fails to comply, the City must cause the work to be done and bill the property owner for the cost.

III. Tree Removal

A. City Services

The City does remove dead, dying or structurally unsound street trees. You may call 277-4531 if you feel your street tree should be removed.

B. Property Owner

The property owner may remove a healthy street tree with a permit from the Department of Public Works. Permits may be obtained by telephoning 277-4531. A permit for the removal of a healthy street tree will only be issued after an inspection of the tree which shows the tree to be causing extensive damage to concrete or underground utilities or if the variety or structure of the tree is such that it is a detriment to the neighborhood.

IV. Tree Replacement

A. City Services

The City will provide and deliver a five gallon replacement street tree upon request of a property owner. Requests may be made to the Division of Landscape Architecture by phoning 277-4531.

Along with the replacement trees the City will deliver a tree stake, tree tie, fertilizer tablets and planting instructions.

B. Property Owner

By requesting a replacement street tree, the property owner obligates himself to plant the tree in the public right-of-way in front of his home. The property owner may purchase and plant acceptable varieties of street trees in the public right-of-way after obtaining a permit from the Department of Public Works. Permits may be obtained by calling 277-4531.

V. Automobile Accidents

A. City Services

If there is an accident report on file with the San Jose Police Department giving the name and address of a driver who has damaged a street tree the City will repair or remove and replace the tree at no cost to the property owner and recover the cost from the driver.

B. Property Owner

If there is no accident report or the driver is unidentified, the property owner may repair or replace the damaged tree. The City will, of course, remove any hazard and upon request will deliver a replacement tree for the property owner to plant.

VI. Tree Diseases and Insects

A. City Services

In 1974 the Department of Public Works began an integrated insect control program for street trees. This program uses all methods of insect control approved by the Environmental Protection Agency, including soap and water sprays to kill aphids, the use of bacteria to control caterpillars, the importation of a variety of host specific predatory or parasitic insects to control pests and as a last resort, insecticides. We do have some insects in San Jose that create aesthetic problems; however, there are no major insects or disease problems at this time that cause the death of street trees.

B. Property Owner

The intergrated insect control program requires the help of property owners in two ways; first, we ask that you do not use insecticides on your street trees. This is almost always unnecessary for the health of the tree and it will not allow us to continue a program of controlling insects using other, more effective and economical means. Second, we ask that any suspected disease or insect problems in street trees be reported to us promptly by calling 277-4531.

VII. Watering and Fertilization

A. City Services

The City does not water or fertilize street trees after planting.

B. Property Owner

Property owners should maintain a watering basin around street trees and water heavily about once a week during dry weather. Semi-annual applications of fertilizer in accordance with package directions would also be beneficial.

If you have any questions or comments concerning the policies or programs outlined above, please feel free to call the Department of Public Works, Division of Landscape Architecture at 277-4531.

APPENDIX 16.

Extract from the Minutes of the
Ad Hoc Committee on City Street
Trees November 14, 1975

AD-HOC PROFESSIONAL COMMITTEE RE:

DOWNTOWN STREET TREE PLANTING

A meeting was held on Friday, November 14th at the office of Dr. J. Neill, UBC Botanical Gardens. Present were:

Dr. J. Neill
Mr. C. Justice
Mrs. C. Oberlander
Mr. R. Gardner

The object of the meeting was to review progress to date and to prepare suggestions for the committee as a whole regarding the overall Vancouver tree planting program. The members present reviewed the Minutes of October 30th and decided to restrict discussion to Item 1 Parts C and D, Philosophy and Scope.

It was decided after discussion that the group would attempt to distinguish the components of goals and objectives.

1.) It was felt that the Goals should extend City Wide and that if it was felt wise to subdivide the city into character or management areas this would be an item of policy on the part of the City Departments concerned.

2.) It was agreed that any plan must be comprehensive and recognize and interpret Design as a fundamental element of future planting programs. Design must be rational and address all concerns, both practical and asthetic.

3.) That the goals must contain a strong message at varying levels aimed at education in the areas of -

a) Upgrading of trades and professional personnel in the city tree field
b) Improving of the civil and political awareness of trees and tree problems
c) Stimulating public awareness
d) Awakening concern in school children

4.) Providing the appropriate framework of by-laws and staff to enable any programs to progress in an orderly fashion.

5.) That substantially improved Husbandry of City trees should be obtained and that the basic tools and information for such improvement should be compiled in a form which is both simple and attractive. In addition, funds and resources should be provided on an ongoing basis to update such a publication and provide field instruction to city residents for its implementation.

6.) The specific goals should all build on the fundamental premis that Vancouver is unique, historically, culturally, regionally and botanically, and that the tree planting program should be integrated with all of these components.

7.) An opening statement should stress that progress towards the goals is dependent on co-ordinated team work between the citizenry, interest groups, professional groups, City Council and its various departments and that a working panel forum to promote this co-ordination will be initiated.

SUGGESTED APPROACHES AND NEEDS

V A N C O U V E R C I T Y T R E E P R O G R A M

FRAMEWORK

Philosophy
Goals
Objectives
Policy

PLANS

Management
Planting
Maintenance
Allocation of resources

INVENTORIES

Trees
Equipment
Staff
Nursery
Constraints
Historic trees

SCHEMATICS

Responsibilities
Organization
Law & Enforcement

MANUALS

Directives
Work Standards
Booklet
Design Guidelines
Training
Approved equip.

STAFF

winter
summer

MONEY

MISCELLANEOUS

METHODS

Care Establishment
Protection

EDUCATION

Schools
Prive citizens
Employees (a) Trades
(b) Professionals
City Elected Officials

APPENDIX 17.

City Engineer's Recommendation for amending City Council's Policy concerning Downtown Tree Planters

THE FEASIBILITY OF PLANTING TREES IN THE DOWNTOWN AREA

March 1972.

TABLE OF CONTENTS

2 March, 1972.

SUMMARY

The following table is a summary of the costs of a tree in a planter compared to a tree planted in the ground:-

	Capital Cost (NOT paid by City)	Maintenance Cost (paid by City)
Tree in a planter	$ 112 each	$ 26 per year
Tree in the ground	$ 104 each	$ 4 per year

Trees in planters can be placed on top of areaways and underground utilities. The smaller size of trees used in planters also permits locations closer to canopies, signs, and overhead wires.

Trees planted in the ground are much larger, having a minimum diameter of 3 inches, with 6 to 7 feet of clear stem, and are less obstructive to pedestrians and to vehicle access.

The Engineering Department estimates that approximately 1,000 trees might be installed on major downtown streets by organizations. The timing of this project will depend upon the success of the Downtown Business Association in its fund raising and the amount of interest expressed by its members.

The average yearly cost to the City of 1,000 trees would be $4,000 if these 1,000 trees were planted in the ground, or about $26,000 if they were put in planters.

2 March, 1972.

CONCLUSIONS

1. The City can change from planters to trees planted in the ground, with the result that the total cost to the City would be less than one-sixth of the amount required to maintain an equal number of planters.

2. This change will visually result in more "green space" in the downtown area because of the larger type of trees to be used.

3. The advantages of planters over trees planted in the ground are minor in comparison to the savings to be realized by planting trees in the ground.

4. Any large scale (at a minimum, one block, one side) installation of trees by organizations can be accommodated by planting the trees in the ground.

5. Since only a relatively small number of sites necessitate that planters be used, a store owner at one of these sites who wants some trees in front of his premises could install planters at his own expense as at present.

RECOMMENDATIONS:

1. Where feasible, trees should be planted in the ground rather than put in planters.

2. In cases where special conditions restrict the planting of trees the City Engineer should decide if it is acceptable to plant a tree or not. If not, the City could receive applications from individual property owners or businesses to install planters.

2 March, 1972.

BACKGROUND

On October 26, 1971 City Council passed a motion "that Council adopt in principle the planting of trees on downtown streets rather than trees in movable tubs, and that the Board of Administration be instructed to have the City Engineer, with advice from the Park Board, report back as to the feasibility of implementing this policy, together with cost estimates based on an annual program".

The present arrangement for installing trees in the downtown area passed by Council on ~~August 31~~ SEPT 14st, 1971 is basically divided into two parts: installations by individual property owners or businesses, and installation by organizations or agencies. In the first case, installations are done on a small scale and the property owner or business assumes all the capital and maintenance costs.

It is expected a minority of trees will be installed on this basis. To date, the great majority of trees have been installed by the Downtown Business Association, which intends to continue its tree-planting to include "all major downtown streets." The procedure for an organization or agency to install trees is for it to assume the capital costs, with the City assuming responsibility after installation and acceptance.

Thus, the cost to the City in the future of trees installed in the downtown area will be the maintenance costs of the trees installed by organizations. Since the Downtown Business Association has indicated it intends to carry out a program of tree planting on all the "major" streets in the downtown area, the cost estimate proposed here was done on this basis.

2 March, 1972.

Trees in Planters

1. Disadvantages

(a) Presently the planters are knocked off their bases by parking cars at the rate of about one per week. The Park Board resets these at a cost of $12 to $15 each.

(b) Every 5 to 7 years the root systems of these trees grow to displace the soil to such an extent the roots become bound and the tree has to be replaced by the Park Board at a cost of $25.

(c) The size of tree that can be planted is limited to about 10 feet in height (in the case of the typical 2½ by 2½ by 3½ foot planter - the size of the planters donated by the Downtown Business Association and the size being considered here).

(d) Planters are susceptible to damage, and when broken they and their levelling bases are removed at a cost of about $25.

(e) Litter is often deposited in planters.

2. Advantages

Planters permit trees to be located on top of underground utilities or areaways.

It should be noted that the fact planters are more easily moved is a relatively unimportant advantage. Of the 238 planters placed downtown by the Downtown Business Association since 1962, 38 had to be moved. However, if these trees had been originally planted in the ground, they probably would not have had to be moved. Primarily the planters were removed because they were broken by cars, or because their bulk obstructed bus doors.

2 March, 1972.

3. Cost of a Planter and Tree

(a) Capital Costs

- concrete planter and levelling base (estimate from the company who supplied the present planters)	$77
- tree ($10 to $20)	$15
- earth, planting, installation of planter	$15
- plaque	$ 5
	$112

(b) Maintenance Costs

- watering and fertilizing twice a week in summer	$18 per year
- righting planter knocked off its base by a parking car: cost for 200 planters = $12-$15 per week x 52 weeks = $620 to $780 per year	
Average cost per planter = $700÷ 200 =	$ 4 per year
- replacing "root bound" trees every 5 to 7 years at a cost of $25, including labour, Average cost per tree	$25 every 6 yea

TOTAL AVERAGE COST PER PLANTER

1st year = $112 + 22	7th year = $22
2nd year = $ 22	8th year = $22
3rd year = $ 22	9th year = $22
4th year = $ 22	10th year = $22
5th year = $ 22	11th year = $22
6th year = $ 22 + 25	12th year = $22 + 25

Total cost over 12 years: $426 per planter

Capital Cost = $112

Maintenance cost = $314 per planter = Average of $26 per year maintenanc

2 March, 1972.

Trees Planted in the Ground

1. Disadvantages

Because 15 to 30 foot trees are involved, pruning is often necessary This would usually begin about 5 years after the tree was planted and co an average of $4 per year thereafter. The larger size also restricts the number of possible locations due to the confining effects of canopies, ar ways, undergroung utilities, overhead wires and traffic and commercial si

It might be thought these larger trees could significantly affect the cost of street cleaning; however, since the downtown streets are presently cleared once a night, the Sanitation Branch expects no significant effect on the cost.

2. Advantages

(a) Low Maintenance Costs

- watering is necessary just once per week and only in the two summers after the tree has been planted.
- trees cannot be easily disturbed by parking cars as the trunks are located about 2½ feet from the curb.
- the life expectancy of a tree planted in the ground is indefinite.

(b) Larger trees have to be used (minimum 6 to 7 foot clear stem necessary for clear eye level vision).

(c) At street level, a tree planted in the ground takes up less space than a tree in a planter, so it is less likely to obstruct car or bus doors, or restrict other types of movement.

3. Cost of Planting a Tree in the Ground

(a) Capital Costs

- breakup and remove concrete from 3 by 3 foot area of sidewalk. Engineering gives price of $1.54 per square foot.	$ 14
- one large tree ($30 to $50)	$ 40
- dig 3 by 3 foot hole 4 feet deep, put in drainage if necessary, put in top soil and plant tree, install porous concrete surface or low evergreen shrubs.	$ 50
	$104

2 March, 1972.

(b) Maintenance Costs

- watering	$8 per year (for 2 years)
- pruning	$4 per year (after 5 years)

Total Average Cost per Tree

1st year = $104 + $8	7th year = $4
2nd year = $8	8th year = $4
3rd year = $0	9th year = $4
4th year = $0	10th year = $4
5th year = $0	11th year = $4
6th year = $4	12th year = $4

Total cost over 12 years: $148 per tree

Capital Cost = $104

Maintenance cost = $44 = Average of $4 per year maintenance costs.

A graph of these maintenance costs and those of a typical planter tree appear in Figure 1 on the next page.

2 March, 1972.

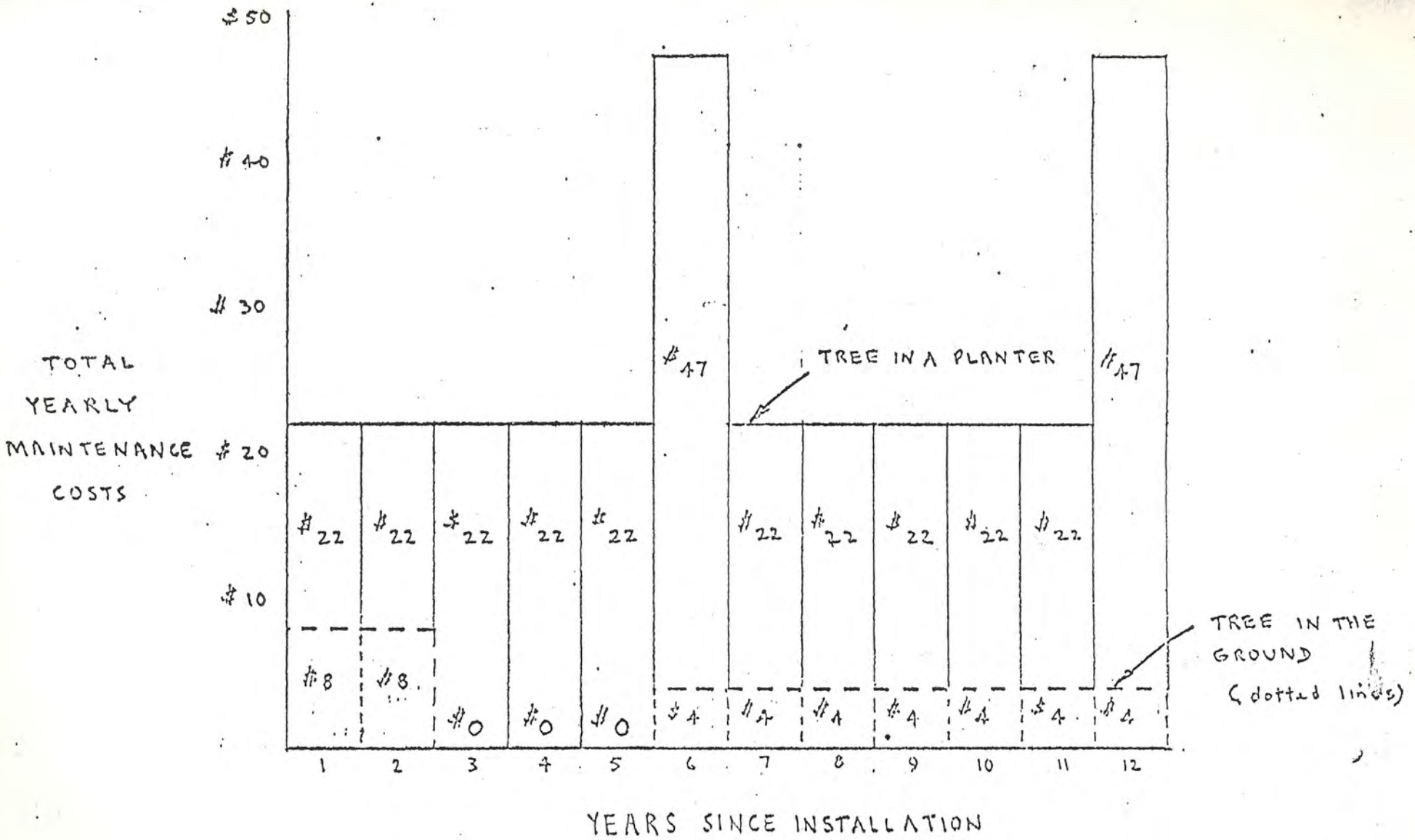


FIGURE 1: Graph of the average yearly maintenance costs of a typical planter tree and of a typical tree planted in the ground, versus time since installation.

Estimate of Total Cost to the City

An accurate estimate of the number of trees that may be installed in the downtown area in the coming years could not easily be determined. The Downtown Business Association financed 100 planters in 1962-63, and 138 in 1967-68. Central Heating Distribution has installed 16 (the Downtown Business Association will look after all future installations of this type) and local improvements on Theatre Row have been responsible for 40 more. All of these are maintained by the City. The Manager of the Downtown Business Association would not make any estimate of how many trees his Association might install in the future. He said it would depend on how well fund-raising would go and the amount of interest. However, the Association still intends to put trees "on all major downtown streets", and now only awaits the report from the City on its request to proceed with its tree planting.

The estimate prepared here of the number of trees that might presently be planted on the "major" streets in the downtown area was based on the average number of trees per block presently in planters and being maintained by the City. At the writing of this report there were 200 planters on 10 one-block street segments or an average of 20 per block. This roughly coincides with the number of trees planted in the ground on Georgia Street between Burrard and Stanley Park. However, this section of Georgia Street has no areaways, fewer projecting canopies and a relatively low density of commercial signs compared to the major streets in the area considered by the Downtown Business Association to be its "area of concern". (See Figure 2, page 10. This is the area bounded by Burrard and Main, and Pacific and Cordova).

Figure 3, Page 12, shows that in most blocks areaways would present only a minor restriction on the planting of trees. At some locations, however, they will preclude trees planted in the ground. Likewise, underground utilities as a rule are under the pavement and far enough from the sidewalks to be only a minor problem. Areaways and under-

FIGURE 2: The Downtown Business Associations' "area of concern"

On the streets marked there are in total approximately 1000 sites where trees could be planted.

ground utilities would probably each reduce the number of tree sites for planting in the ground by about 10%.

Possibly the most significant restriction on the planting of trees in the downtown area would be the attitude of store owners towards having their store signs blotted out at their own expense.

To date there have been some complaints by store owners about the small planter trees obscuring commercial signs from motorists. There have been no complaints from store owners on the part of Georgia west of Burrard, where large trees have been planted in the ground, but this section of road contains relatively few commercial signs.

Taking into consideration the greater size of trees planted in the ground and the corresponding greater confinement by canopies, areaways, underground utilities, overhead wires, and traffic and commercial signs, it has been assumed that a more realistic figure of the number of trees that might be planted per block would be about 15. This estimate also assumes a general acceptance of these larger trees by the Downtown Business Association. It would seem possible an adverse reaction by store owners might reduce this to 10 per block or less; however 15 per block would appear to be reasonable.

Figure 2, Page 10, shows in dots the "major" downtown streets with no trees. Including the blocks now with planters there are about 65 "major" downtown blocks. Multiplying the number of "major" downtown blocks by the average expected number of trees per block (65 blocks x 15 trees per block) gives an estimate of about 1,000 trees. It would probably take at least 10 years to plant this many trees if the tree planting program goes as planned.

In view of the problems presented by areaways, utilities, and projecting signs in some blocks, a policy of planting trees in the ground where appropriate should be adopted. The City Engineering Department should make the decision as to the suitability of a location.

2 March, 1972.

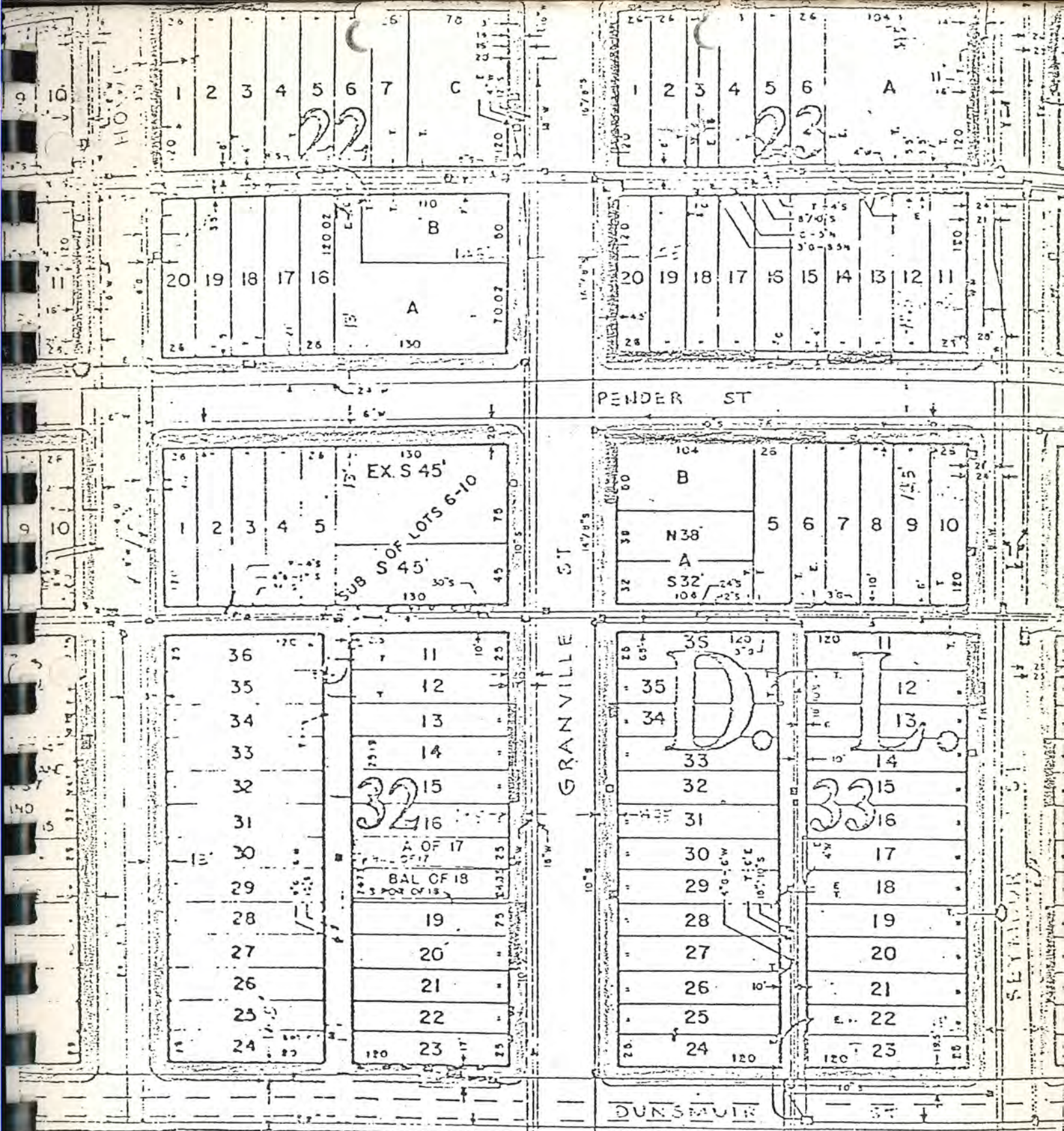


FIGURE 3: The relationship between areaways and sidewalks, typical of the area north of Georgia Street.

APPENDIX 18.

Goals and Objectives for the City of Vancouver Boulevard Tree Program recommended by the Ad Hoc Committee November 20, 1975

AD-HOC PROFESSIONAL COMMITTEE RE:

DOWNTOWN STREET TREE PLANTING

November 20, 1975

A meeting of an ad-hoc professional committee re: downtown street tree planting was held in the No. 2 Committee Room, Third Floor, City Hall, on Thursday, November 20, 1975, at 10:30 a.m.

PRESENT: Alderman Cowie, Chairman
Mr. W. Curtis, City Engineer
Mr. S. Cripps, Park Board
Mr. J. Ellis, Planning
Mr. R. Gardener, Environmental Advisor, B.C. Hydro
Mr. C. Justice, Landscape Architect
Mr. W. Livingstone
Dr. J. Neill, U.B.C. Botanical Gardens
Mrs. C. Oberlander
Mr. E. Pitt, Park Board

CLERK: R. Demofsky

INFORMATION:

1. Future Tree Planting for Downtown

On October 30, 1975, this Committee discussed the tree planting plan and resolved,

"THAT the Park Board report to the next meeting with future plans for tree planting for the downtown area, regulations related to street tree planting, and the organizations involved in this process."

Steven Cripps presented maps outlining the system for street tree planting. This system would use the symbol method for recording existing trees and would be outlined in a sectional map. Such a map could be added to at any time and could use plastic over-lays for collecting additional information. He advised that a complete inventory for the downtown area would be completed in January, 1976. Also that Mr. F. Carefield at the Surrey nursery will be compiling a complete list of trees available.

Mr. W. Curtis, City Engineer, advised that the City has a mechanized system for recording tree inventory. This system is extremely effective.

Mr. C. Justice suggested that each tree be assessed on a regular basis. The Chairman suggested that the Park Board tree pruning budget be reallocated to expand this service to include such a tree assessment. The Committee noted that the Fire Department, City Engineer, etc., had certain stipulations related to tree planting with regards to size, etc., and such regulations sometimes created emotional problems among the tree planters.

At this point in the meeting the Chairman referred to the minutes of a meeting of a sub-committee of this Committee which outlined the following goals and objectives:

"1.) It was felt that the Goals should extend City Wide and that if it was felt wise to subdivide the city into character or management areas this would be an item of policy on the part of the City Departments concerned.

Cont'd . . .

2.) It was agreed that any plan must be comprehensive and recognize and interpret Design as a fundamental element of future planting programs. Design must be rational and address all concerns, both practical and asthetic.

3.) That the goals must contain a strong message at varying levels aimed at education in the areas of -

a) Upgrading of trades and professional personnel in the city tree field
b) Improving of the civil and political awareness of trees and tree problems
c) Stimulating public awareness
d) Awakening concern in school children

4.) Providing the appropriate framework of by-laws and staff to enable any programs to progress in an orderly fashion.

5.) That substantially improved Husbandry of City trees should be obtained and that the basic tools and information for such improvement should be compiled in a form which is both simple and attractive. In addition, funds and resources should be provided on an ongoing basis to update such a publication and provide field instruction to city residents for its implementation.

6.) The specific goals should all build on the fundamental premise that Vancouver is unique, historically, culturally, regionally and botanically, and that the tree planting program should be integrated with all of these components.

7.) An opening statement should stress that progress towards the goals is dependent on co-ordinated team work between the citizenry, interest groups, professional groups, City Council and its various departments and that a working panel of forum to promote this co-ordination will be initiated."

During discussion of these goals and objectives the Chairman suggested that Recommendation No. 7 should be taken on by the Park Board and be in constant liaison with City departments. It was suggested that Van Dusen Botanical Gardens could be responsible for the function of educating the public about tree planting and all public relations. Such a program could outline the City's policy. Botanical gardens could work with City departments and the Park Board.

It was agreed that Vancouver is a unique City with regards to rainfall, sunshine, view property, etc., and therefore, other cities' tree planting plans could not be used as a guide. We must establish our own plan. Cornelia Oberlander suggested that an ordinance of trees be included in such a plan with one organization responsible for this, such as Van Dusen Gardens or the Park Board.

The Chairman advised that establishing a policy was a three phased process being:

a. getting people interested in tree planting;
b. collecting information related to a policy which could lead to an ordinance;
c. establishment of an ordinance.

Cont'd....

Mr. Curtis advised that in the City Charter the Engineering Department is given the overall responsibility for the street tree planting program, and this responsibility is controlled very loosely. Engineering trys to control safety, economics, etc. This is their only interaction in this matter.

His department is chiefly concerned with safety and economics of tree planting. Once funds have been approved the Park Board is in charge of planting the trees and doing the design work, etc. Some exceptions exist, such as Granville Mall. The Engineering Department is concerned about existing underground utilities, etc., and outlines stipulations in this regard. His department works closely with the Park Board on this. He further advised that leaf clean-up consumes a large part of the budget. Also, that trees push up City walks and cause havoc with sewers. Engineering intervention for these reasons is necessary. He noted that the only Park Board constraints with relation to tree planting were Fire and Engineering Department constraints outlined above, and the budget.

Mr. Livingstone suggested that if the Park Board was to be given full control of the street tree planting plan it would best be done long-term; i.e. five-year basis, so that an overall program could be outlined. It would therefore be important to clarify the budget available for this.

Mr. Curtis reiterated that once Council has approved funds for street tree planting and once the Park Board has discussed their proposed planting plan with other City departments, they are in control of design and tree planting.

Mr. Justice advised that any booklet published should be one unique to the City of Vancouver to outline what exists here. It should also outline a plan philosophy, and endeavor to consider a street tree program to husband what exists, and to improve this, and also to outline a participatory policy for people to plant trees.

With regards to getting people interested in tree planting it was noted that the Park Board would report back with a program of giving trees to schools so that school children could plant and take care of these, and thus arouse interest. The Chairman advised that the environment should not suffer and to this end he proposed the following motto which would relate to all interested groups and individuals:

"Step Forward And Volunteer".

A sub-committee was formed to pursue the school project noted above and was made up of Clive Justice, Ernie Pitt, and Cornelia Oberlander.

The next meeting of this Committee to be in late January, 1976, at which time a tree planting inventory of the downtown area would be available.

The meeting adjourned at approximately 11:47 a.m.

* * * *

APPENDIX 19.

List of Recommended Boulevard Trees supplied by the Park Board Staff

BOARD of PARKS
and RECREATION
CITY OF VANCOUVER

2099 BEACH AVENUE
VANCOUVER, B.C.
CANADA V6G 1Z4
PHONE (604) 681-4141

TREE DESCRIPTIONS

Beech (FAGUS SYLVATICA)

A handsome, large, round headed tree which grows up to 100 feet in height. It is not too suitable for the small garden or street plantings because of the dense growth and heavy shade. The smooth, steel-gray bark of the trunk and the fascinating branching habit provide an interesting contrast during the winter. Bud and leaf development in the spring reveals wonderful colour tones of browns and greens.

Birch, Cut-Leaf and European (BETULA PENDULA GRACILIS)

The Birch has year round beauty with form, bark, leaves and fall colour. A graceful tree, 50 to 60 feet in height, with pendulous branches, it is better adapted to informal use rather than parking strip planting.

Camperdown Elm (ULMUS GLABRA CAMPERDOWNI)

An extremely interesting tree, reaching 15 feet in height, it can be used as a specimen for the patio or outdoor living room. Its compactness and broad umbrella shape make it a first class small shade tree, suitable for narrow parking strips or unusual locations. Its formal appearance adds dignity to any street.

Catalpa, Globe (CATALPA BUNGII)

The dense, spreading head of branches forms a perfect canopy for the patio or outdoor living room. Its pale green leaves are broadly ovate, have a heart shaped base and are from five to ten inches long. The tree attains a height of 20 to 30 feet.

Chinese Maidenhair Tree (GINKGO BILOBA)

A most attractive and durable deciduous tree. Brought to America from gardens of the Orient in the eighteenth century, it is unknown in the wild state. The flowers are insignificant, but the leaves have a unique fan shape and retain a healthy deep green colour throughout the season, turning to a rich gold in the late summer. It is a hardy, long lived tree with extremely low maintenance costs. Average annual growth of the young trees is two to four feet, and it will attain an approximate height of 40 feet in 25 years.

Devil's Walking Stick (APALIA ELATA)

The dramatic branching habit of this tree-like shrub lends itself to group plantings in comparatively large areas only. It attains a height of approximately 25 feet and has prickly stems and compound dull green leaves two to three feet long. The gigantic leaves appear in the spring as a hairy,

bronze-green growth which blends to dark green on top and light green underneath. In the fall the leaves turn to a bronze-red suffused with yellow. The flowers make a belated appearance in the late summer. The main objection to this tree is its thorny trunk.

Dogwood, Pacific (CORNUS NUTTALLI)

Flowering Dogwood is especially adapted to shady locations and for shrubby effect in landscape plantings. The large white flowers in mid-April, followed by bright red fruits, make it by far the showiest in bloom of all Dogwoods. It is one of the outstanding ornamentals that will frequently flower a second time in August or September.

Golden Rain Tree (KOELREUTERIA PANICULATA)

One of the best medium sized trees, to 25 feet in height, in cultivation, it is outstanding for the small garden or narrow parking strip. It bears tall panicles of minute but bright yellow flowers marked with orange-red at the base in July. It prefers full sun and withstands drought and poor soil conditions.

Hawthorn, Lavalle (CRATAEGUS LAVALLEI)

A magnificent tree of sturdy, leafy habit, reaching a height of 15 to 20 feet. The foliage maintains a glossy green colour during the summer, changing gradually to beautiful fall colour. White flowers blossom in June, and orange-red fruit in the fall and winter produces an interesting contrast. This is one of the handsomest of all Hawthorns and truly a prize ornamental for streets and narrow parking strips.

Hawthorn, Paul's Scarlet (CRATAEGUS OXYACANTHA var. PAULI)

An excellent tree suitable for formal planting in rows to produce a massive effect or for informal planting in the garden. A small tree, reaching only 25 feet, it produces a sea of magnificent double scarlet blossoms and is practically fruitless and thornless. This tree is ideal for planting in narrow parking strips.

Hogan Cedar (THUJA PLICATA var. FASTIGIATA)

A beautiful columnar evergreen, which attains a height of 90 feet, native to the Columbia Valley. Its cylindrical form makes it ideally suited for use as a windbreak and background planting for flowering trees. It is extremely hardy and is not subject to root rot.

Hornbeam, European (CARPINUS BETULUS)

An excellently shaped tree resembling the Beech, both in leaf shape and branching pattern. It is a tough and hardy tree, to a height of 50 feet, with a twisted bole, and will tolerate poor soils. This is a good tree for row plantings in medium width parking spaces because roots are well behaved.

Horsechestnut, Red (AESCULUS CARNEA BRIOTI)

This fruitless, beautiful red-flowering tree with deep green foliage is excellent for front lawn or medium width parking strip use. The flowers are deep red colour, produced in panicles five to eight inches long. The compact and round headed form of this medium size tree, to a height of 35 feet, makes it ideally suited for street use.

Japanese Cherry, Autumnalis (PRUNUS SUBHIRTELLA var. AUTUMNALIS)

A beautiful, small, wide spreading tree growing to approximately 18 feet in height. It has a delicate, small, pink flower that blooms fairly profusely in the early spring and again in the fall; some years it has been known to bloom nearly all winter. It is a truly delightful and delicate tree with fine foliage, yet hardy.

Japanese Cherry, Daybreak (PRUNUS SERRULATA var. AKEBONO)

A marvellous small flowering tree of conventional form, it attains a height of approximately 25 to 30 feet. The beautiful pink buds suddenly open in April to pure white double flowers, just ahead of the foliage. It is a real thriller that is weighted down with blossoms.

Japanese Cherry, Kwanzan (PRUNUS SERRULATA var. KWANZAN)

This beautiful, upright, rather stiff, vase shaped tree is one of the sturdiest of the Japanese cherries. It bears no fruit, is covered with a shower of gorgeous magenta pink blossoms and is one of the latest to bloom. The flowers are large, averaging two inches across, and hang in independent clusters of three or four. This tree reaches an approximate height of 25 to 30 feet.

Japanese Cherry, Mt. Fuji (PRUNUS SERRULATA var. MT. FUJI)

One of the best flowering cherries, with an upright, vase shaped habit of growth, reaching approximately 25 to 30 feet in height. The flowers are large, double, white, semi-fragrant and grow in short-stemmed clusters of two to five. The leaves turn golden in the fall.

Japanese Cherry, Sargent's (PRUNUS SARGENTI)

One of the finest of the Cherries. It grows to an approximate height of 35 to 40 feet and has a conventional shape with a beautiful mahogany coloured trunk. It is covered in spring with a mass of deep pink single flowers. The foliage is bronze coloured in the spring, a good green in the summer, turning to flaming red in the fall.

Japanese Cherry Shogetsu (PRUNUS SERRULATA var. SHOGETSU)

Another good Flowering Cherry with beautifully arching branches. It is low growing, forming a small spreading tree 12 to 15 feet in height and 15 feet across. The beautiful pale pink, flesh coloured flowers are the daintiest of the doubles.

Japanese Crabapple (MALUS FLORIBUNDA)

Probably the handsomest and most reliable of the crabs. It is a small, round topped tree which grows to approximately 25 or 30 feet in height. The buds are carmine but change to pink, then white. The flowers are single, but the mass effect produced by this profuse bloomer is nothing short of spectacular.

Japanese Crabapple, Almey (MALUS ALMEY)

A beautiful small tree which grows to approximately 20 or 25 feet in height, with a nice round or oval form. The flowers are blazing red, and the foliage is a good green throughout the summer. The fruit is also bright red, and they are among the most attractive.

Japanese Pagoda Tree (SOPHORA JAPONICA)

One of the oldest and finest trees for ornamental use, attaining a height of 70 feet under ideal conditions. It is a rounded tree with wide-spreading branches and grows exceedingly well under adverse conditions; however, it is of slow growth and may not come into bloom for 15 to 20 years. The creamy white flowers are borne in loose panicles or clusters twelve inches long, and the yellow-green pods in autumn are an attractive sight. It does not provide autumn foliage cover, but is comparatively free of insects and diseases.

Japanese Maple (ACER PALMATUM)

All forms of the Japanese Maple are excellent for the formal or informal garden, blending beautifully with the Flowering Cherries and Azaleas. They are small trees, 15 to 20 feet in height, suited to woodland plantings under large evergreens. The fall colouring is brilliant.

Madrona (ARBUTUS MENZIESI)

A native broad-leaved evergreen tree, attaining an approximate height of 75 feet. It is usually found growing on dry bluffs or ridges, invariably in poor soil. When planted in good soil it will grow rapidly, but, like all broad-leaved evergreen trees, leaf drop occurs during the summer. The chocolate brown bark sheds, as in the London Plane. The creamy white, fragrant flowers are not spectacular in bloom, but the fruit, which turns red in early fall, makes a colourful display. A truly picturesque tree, but a trial and aggravation to the unduly neat gardener.

Magnolia (MAGNOLIA GRANDIFLORA)

The large, rich, glossy evergreen foliage and lavish production of fragrant blossoms ranks the Magnolia high among ornamental trees. Waxy white blooms are borne freely during early spring and summer. It needs a sheltered, sunny, wind-free location, and for this reason is not generally suited to parking strip plantings.

Maple, Hedge (AGER CAMPESTPE)

A sturdy, compact headed tree of beautiful proportions, growing to about 35 feet. The fine textured foliage turns brilliant yellow in the autumn. It is a dense tree, casting very heavy shade, has corky bark, is extremely hardy and will tolerate a wide variety of adverse conditions. This tree is suitable for parking strips of medium width or the front garden.

Maple Norway (AGER PLATANCIDES)

A large, relatively broad tree with a dense head, attaining a height of 80 feet. The bark is extremely dark, and, although this is not considered a flowering tree, the greenish yellow flowers are showy. It produces dense shade and, because of its large size, requires ample room. This tree is not suited to parking strips, but the fall colour is exquisite.

Maple, Vine (ACER CIRCINATUM)

Our native Maple, similar in some respects to the Japanese Maple, is a beautiful spectacle in fall colour. It is a 25 to 30 foot tree or shrub, better used in mass or group plantings.

Mazzard Cherry (PRUNUS AVIUM var. PLENA)

A broad pyramidal tree reaching 30 feet in height, with vigor and strength for the most adverse conditions. Small white, double flowers resembling miniature roses shower the tree like snowflakes in early spring. An outstanding tree, ideally suited to the small garden or narrow parking strip.

Mountain Ash (SORBUS AUCUPARIA)

A beautiful, pyramidal tree of 35 to 40 feet in height with three seasonal highlights - flowers, berries and fall colour. Handsome clusters of bright red berries are produced freely in the late summer. Its compound leaves produce a somewhat lace-like texture, turning yellow in the fall. This tree is easy to grow in well drained soil.

Mulberry (MORUS ALBA var. KINGAN)

A fast-growing small tree, not over 30 feet in height, that is fruitless and thrives under the most adverse conditions. The summer foliage is a good solid green, with excellent fall colour.

Pine, Shore (PINUS CONTORTA)

The only native two-needle Pine. Its beautiful deep rich green foliage makes it ideally suited as a background for flowering trees. Height varies with location, but it is normally considered a large tree.

Oak, Pin (QUERCUS PALUSTRIS)

The pyramidal shape and slender horizontal branches give it a graceful appearance. The typical green Oak leaves of summer fade to red-bronze tints in fall, then to a leathery brown and hang on the tree all winter. The tree does not grow over 70 feet in height.

Oak, Red (QUERCUS RUBRA var. BOREALIS)

One of the best large shade trees available, reaching approximately 70 feet in height and requiring ample space. It is a beautifully shaped tree with upward-curving branches that form a nearly perfect symmetrical top. It has the typical Oak leaf, turning red in autumn.

Sourgum or Tupelo (NYSSA SYLVATICA)

Not only outstanding for its brilliant red foliage in autumn, but also because of its unusual, slender, horizontal branching habit. The dense horizontal foliage is a brilliant glossy green in the summer. It is an attractive tree, growing up to 80 feet in height under ideal conditions, but it will not thrive in under-exposed conditions.

Sourwood (OXYDENDRON ARBOREUM)

A relatively slow-growing tree, only occasionally exceeding 30 to 35 feet. The graceful white flower clusters, very much like Andromeda, appear in late spring against a bronze-green background of leaves. In autumn the leaves take on a vivid scarlet colour.

Sumac, Staghorn (RHUS TYPHINA)

The Sumacs are more often considered ornamental shrubs than trees and are grown primarily for their large leaves, stunning autumn colours or unusual character. Staghorn, with its upward arching branches, most nearly takes on the size and dignity of a tree and may reach 30 feet in height. The velvety red fruit clusters at the terminal ends of the branches mature in early fall, turning brilliant crimson.

Sweetgum (LIQUIDAMBAR STYRACIFLUA)

An excellent all-around tree. It is a tree of pyramidal, symmetrical form and grows tall and straight to an approximate height of 100 feet. The leaves are star shaped, turning crimson, yellow and orange in the fall. It is a tree of beautiful proportions and is resistant to disease and insects.

Tulip Tree (LIRIODENDRON TULIPIFERA)

One of the finest large trees, to a height of 100 feet, which can be grown. It is a favourite because of the symmetrical habit of growth and extraordinary tulip shaped blossoms, two inches across, which are greenish white with an orange band at the base. It is resistant to insects and disease. The fall colour produced by this tree is exceptional.

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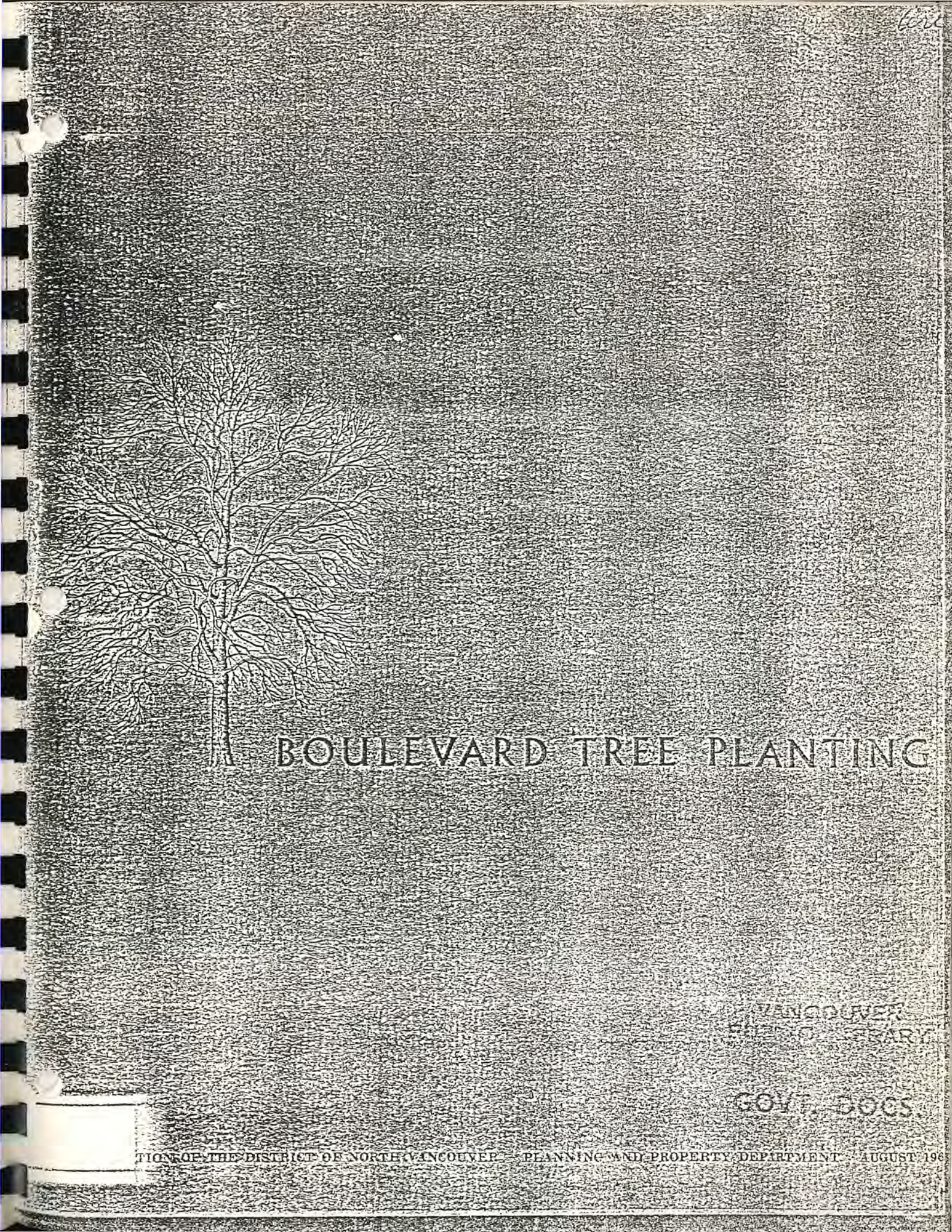
An excellent all-around tree. It is a tree of pyramidal, symmetrical form and grows tall and straight to an approximate height of 100 feet. The leaves are star shaped, turning crimson, yellow and orange in the fall. It is a tree of beautiful proportions and is resistant to disease and insects.

Tulip Tree (LIRIODENDRON TULIPIFERA)

One of the finest large trees, to a height of 100 feet, which can be grown. It is a favourite because of the symmetrical habit of growth and extraordinary tulip shaped blossoms, two inches across, which are greenish white with an orange band at the base. It is resistant to insects and disease. The fall colour produced by this tree is exceptional.

APPENDIX 20.

Extract from the Text of a North Vancouver Report including a Summary of Vancouver Boulevard Tree Policies



BOULEVARD TREE PLANTING

TION OF THE DISTRICT OF NORTH VANCOUVER — PLANNING AND PROPERTY DEPARTMENT — AUGUST 196

DISTRICT OF NORTH VANCOUVER : BOULEVARD TREE PLANTING

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(ii) Capsule Policies

We propose to consider the policies adopted by the Vancouver Board of Parks and Public Recreation in some detail, (see (iii), below): we might summarise other approaches in these terms;

Burnaby: no specific policy and no precise standards. The Parks Superintendent has been asked to look into the matter.

Richmond: boulevard tree planting is undertaken as local improvement, on basis of a plan prepared by staff for the street, allowing for continuity. Maintenance and replacement is the responsibility of the Municipality.

West Vancouver: no specific policy on Bylaws. All work planned and done on a co-operative basis - the Municipality undertakes the planting and charges the abutting owners for the trees etc., no charges are made for subsequent maintenance of trees, but owners look after the boulevards.

New Westminster: all boulevard construction is carried out via Local Improvement, with a fifty-fifty cost sharing formula.

City selects and supplies trees and the owners pay. Parks Board maintains boulevards at no cost to the abutting owners.

(iii) Vancouver City : Parks Board

Current policy is contained, basically, in two statements; one, submitted by Mr. W.C. Livingstone, Supervisor of Parks and Boulevards, in February, 1960 and the second a compilation of the policies of the various civic departments and the utility companies and dated June, 1964. The emphasis, in both, is upon the negative aspect of control, of the problems and collisions of interest that may occur with boulevard trees, rather than with any programme of tree planting. We quote from the policy 'round-up':

"Park Board Policy

Care and custody of boulevard trees responsibility of Park Board.

Aims - to improve boulevard tree plantings by:

(a) Removing dead and diseased trees

(b) Removing some of the large overgrown trees

(c) Pruning by thinning and drop-crotching

(d) Pruning off low branches

(e) Spraying to control insects and fungi

Trend is toward removal of larger types of trees and replacing with smaller growing types. However, some of these larger trees that are in good condition will be preserved.

Boulevard trees are public property. Any wanton damage to trees is liable to public criticism and prosecution."

The outline then describes the policy that is adopted with respect to B.C. Hydro and B.C. Telephone lines: street trees interfering with these lines are pruned or tunnelled by Park Board crews to give suitable line clearance. For several years up to 1952 an annual $5,000 per year programme of tree removal was undertaken at $40 per tree in connection with complaints made by each of the utility companies. Where other civic departments are involved, offending trees are either pruned or, where no other solution presents itself, are removed altogether. In some instances, young trees can be transplanted, and where an otherwise sound tree might be damaged or have its wind stability affected, the appropriate department (sewer, water) tunnels underneath or installs root-proof pipe.

An interesting survey was carried out in the area bounded by 33rd and 49th Avenues and by Arbutus and Dunbar in the City of Vancouver, in which it was found that there were 4,662 trees. Of this total, 1,381 were small young trees and 3,281 were large trees (70.4%). Only 201 of the large trees were considered to be in good condition, (6.1%), 2,143 (or 65.4%) were rated as fair and 937 (28.5%) were in poor condition.

Within this test area, there were 33 blocks with dual Hydro and Telephone lines and 265 trees, of which 183 were recommended for removal: 2 of these in turn were the subject of sewer complaints; there was a total of 88 blocks with Hydro lines and these contained 843 trees of which 433 were recommended for removal; of these 23 were related to sewer complaints; there were 78 blocks with Telephone lines only, including 629 trees of which 284 were recommended for removal: 6 were linked to sewer complaints.

In addition, there was a total of 159 sewer complaints in the area, 337 trees required pruning because of their obstruction of street lights and 18 property owners sought the removal of 40 trees in all.

It would appear, then, that the blocks in which Hydro and Telephone lines coincided with street trees produced a particularly high ratio of 'removals' - 900 (or 51.9%) out of the 1737 trees encountered in these blocks.

The significance of the survey - for us - stems from the fact that this part of the City of Vancouver is an older and more settled area with a great many mature boulevard trees and the conflicts between trees and utility lines reported on page 11 will likely occur elsewhere - including new suburbs - unless carefully considered policies are adopted from the outset.

Policy Statement : Mr. W.C. Livingstone

Many of the points made by Mr. Livingstone in his written policy statement apply as much to North Vancouver for example, as to the City of Vancouver, and in any case he writes with a great deal of practical experience in Parks work behind him. He points out that "the Board of Parks and Public Recreation..... has had to keep an open mind and be receptive to new ideas and species in an effort to establish a policy on boulevard trees. They could not be influenced to too great a degree by what seemed like similar problems of other cities. Vancouver is unique in its topography, offering many views of both sea and mountains, whilst the rainfall, soil, winter conditions and many such variables pose quite different problems. Portland and Seattle, the two cities which might have provided much useful information, have little or no boulevard tree plantings, other than those which have been done privately."

Tree Replacement

With more than 90,000 boulevard trees in the City, varying in age from five to sixty years old, one of the main objectives of the Parks Board programme has been to remove the large overgrown trees and replace them with a selection of trees which would provide a sensible scale in relation to the features of the site, the climate, and the soil in which they would be expected to grow. Consideration has been given to spacing and height of the trees in order to conform to modern street lighting and width of boulevard available, while still allowing the trees to retain their natural habit of growth, with a minimum of interference from fast moving traffic or overhead wires. Mr. Livingstone notes that "we have refrained from planting trees with a deep or heavy root system in an effort to overcome damage to sewers, curbs, sidewalks and various underground services."

Pruning

"It is rather difficult to establish a hard and fast rule governing the pruning of trees on boulevards, since there are so many factors to be considered. The judgement as to choice of species and spacing in many cases has been poor and allowance must be made for these conditions when pruning.

Pruning of trees by private property owners should not be permitted since, in numerous instances, resentment at the loss of a view or at the feeling of being swallowed up by a large tree has caused the mutilation of trees to the point which makes removal of the remaining stump the only choice. Here again spacing and proper selection might have prevented these conditions."

Interference with Overhead Wires

"Regarding the problem of overhead wires the utility companies should be encouraged to remove wires from streets into lanes or easements or better still underground. Failing this, restrictions should be placed on the clearance of wires above the street, since it is noted that some wires have little more than 20-feet clearance above the ground. Trees planted at close intervals under a canopy of overhead wires have to be very severely pruned, leaving large trunks covered with sucker growth. As it is impossible and impractical to re-establish them as trees which would have any structural strength, removal and replanting with species more suited to the area and environment would seem to be the only logical alternative."

Removal via Private Petition

"Removal of trees by petition of property owners as a group or as individual letter writers continues to be a controversial question. This has become most noticeable in areas of close planting, or where the strong growing species have been used. While not wishing to upset the democratic rule of the majority it is not always in the interest of a long range program to give in to the request of an individual or group. Therefore, it should be left to the discretion of the Board in making a final decision on any removals of a controversial nature which can not be settled by the Superintendent or his Assistants."

Conflict with Sewers (and other mains)

"Complaints from sewer stoppage have resulted in the removal of many trees and in the majority of cases the complaints have been justified after checking with the sewer department. This is most prevalent in areas where sewers have been laid in a peaty soil, resulting in pipes settling, leaving openings for roots to penetrate.

The cutting of roots while trenching for the installation of conduit, water, sewer and gas mains should only be allowed when tunneling is not feasible. Negligence from such practice results in the loss of numerous trees.

The removal of roots over three inches in diameter should be discouraged in the repair of curbs and sidewalks. These are the supporting roots which help to hold up the trees in heavy windstorms."

Control

"Planting of trees and selection of varieties should be left entirely to one authority only and trees should not be planted until sidewalks and boulevards have been laid out and graded."

APPENDIX 21.

City of Vancouver Clearing and
Tree Destruction Bylaw 1890

By Law No. 106

"By Law" relating to the Cutting down Clearing, Burning and removing of dangerous Trees, Logs and Brush

Whereas it is deemed expedient that all Logs, Brush and Trees that may by reason of fire or other causes be dangerous to life or property should be removed from within the City Limits

Be it therefore enacted by the Council of the Corporation of the City of Vancouver as follows:-

1. The owner of any land within the City Limits shall cause to remain on his land any trees, logs, brush or underwood that may be from their nature or their proximity to other premises dangerous to life or

Every owner of any land within the City Limits shall suffer to remain on his land any trees, logs, brush or underwood that may be from their nature or their proximity to other premises dangerous to life or property.

2. Every owner of land within the Limits of the City of Vancouver shall cut down and remove from off his land all such trees logs, brush or underwood as described in the last preceding Section on receiving notice so to do from the Police Commissioners of the said City

3. If any owner after receiving such notice as aforesaid fails within the time limited in such notice to remove from off his land the trees logs, brush or underwood, described in such notice

to the satisfaction of the Police Commissioners it shall be lawful for the Corporation by their agents or servants at any time after default shall have been made by the owner or owners of such land to comply with such notice as aforesaid to enter upon such land and to cut down, clear, burn, and remove such trees, loops and brush which the said owner or owners shall have failed to do pursuant to the aforesaid notice.

It shall be lawful for the said Corporation to pay and discharge the expenses of such cutting down burning clearing and removing and to charge the same to the respective owner or owners and on failure of payment of such expenses as aforesaid by any such owner or owners the said expenses shall become liquidated as a debt due from such owner or owners to the said Corporation and all such expenses and costs shall become a first lien

owners and on failure of payment
of such expenses as aforesaid by any
such owner or owners the said expenses
shall become liquidated as a debt due
from such owner or owners to the
said Corporation and all such expenses
and costs shall become a lien fixed
on the property so cleared and shall
be collected with and in like manner
as the taxes levied on the said property
And the Corporation may recover the
same from such owner or owners in
any Court of Competent Jurisdiction
in the Province of British Columbia
together with costs of such proceedings

Any notice, order, summons or
other proceeding required to be served
on any owner or owners may be served
either personally or by leaving the

name of the dwelling house or by affixing the same to any part of the same land —

Done and passed in open Council this 10th day of November 1890.

D. Offenhauser
Mayor

Attest. S. McGuigan
City Clerk

No 106

An Ordinance

relating to removing

of Trees Logs &c

1st reading Oct 27. 1890
2nd " Nov 3. 1890
3rd " Nov 10. 1890

Thos. S. McGuigan
City Clerk

1922

LS SAM.

CITY OF VANCOUVER

BY-LAW No. 1525
& AMENDMENT No. 3178

"TREE DESTRUCTION BY-LAW"

A By-law for regulating and enforcing the clearing of, cutting down, removing, burning, and destroying of trees, timber, logs, brush and debris upon and from lots or blocks or parcels of land in the City of Vancouver.

The Mayor and Council of the City of Vancouver in open meeting assembled, enact as follows:

1. Wherever the words following occur in this by-law they shall be construed in the manner hereinafter mentioned unless a contrary intention appears or the interpretation which this provision would give to such words is inconsistent with the context of this by-law:

(a) The word "person" shall mean and include any body, corporate or politic, or party, and their heirs, administrators, successors, or other legal representative of such person to whom the context can apply according to law.

(b) The word "owner" shall be deemed to extend to and include any person in occupation or possession of or entitled to the land, premises, or property referred to under an agreement of sale.

(c) The word "City" shall mean the City of Vancouver.

(d) The word "Council" shall mean the Mayor and Council of the City of Vancouver.

2. It shall be unlawful for any owner of any land within the City to suffer or permit to remain on such land any trees, timber, logs, brush or debris, when, in the opinion of the Council of the City, expressed by resolution, such lots should be cleared.

3. Every owner of land in the said City shall cut down and remove from his land all such trees, timber, logs, brush, and debris upon being served with a notice in writing from the City Clerk, requiring him so to do, pursuant to any resolution of the City Council from time to time made in that behalf.

4. Such notice shall be served on such owner, in the manner specified by Section 165 of the "Vancouver Incorporation Act, 1921"; and every such notice shall specify a period of not less than thirty (30) days within which such trees, timber, logs, brush and debris shall be cut down, burned or removed by such owner, and shall call upon such owner to clear, cut down, remove, burn, and destroy such trees, timber, logs, brush and debris; and such owner shall within the time specified in such notice clear, cut down, remove, burn, and destroy such trees, timber, logs, brush and debris as the case may be within the time specified in such notice.

5. If any such owner, after being served with such notice as aforesaid, fails within the time limited whereby to clear, cut down, burn, or remove such trees, timber, logs, brush, or debris to the satisfaction of the Supervisor of Lands & Rentals it shall be lawful for the Corporation of the City of Vancouver, by its servants; or agents, at any time after default by

any owner as aforesaid, to cause such trees, timber, logs, brush or debris to be cut down, burned, or removed from any such lands or properties and to charge the owner of the properties whereon the same may be situated with the expense and cost of cutting down, burning, or removing the same. (By-law No. 3178, March 27, 1950)

6. A written statement of the cost and expense of such cutting down, clearing, burning, or removal shall be served by the City Clerk upon any such owner in the manner hereinbefore provided for the service of the said notice mentioned in section 4 hereof, and if such owner fail within thirty (30) days from the service of such statement to pay such cost and expense to the Treasurer of the said City, the said cost and expense may be recovered from such owner by and on behalf of the said City in the same manner and with the same powers of recovery as in the case of overdue taxes.

7. Such cost and expense shall constitute a charge on the lands from which such trees, timber, logs, brush, and debris shall have been so cut down, burned, or removed by the said City and upon default of payment thereof by such owner as aforesaid, the City Treasurer shall upon a resolution in that behalf being passed by the City Council, sell such lands for the recovery of the said expenses and costs in the same manner and under the same regulations as in the case of selling of lands for overdue taxes.

8. Any person guilty of an infraction of this By-law shall, upon conviction thereof before the Mayor, Police Magistrate, or any two Justices of the Peace, or other Magistrate or Magistrates having jurisdiction in the City of Vancouver, on the oath or affirmation of any credible witness, forfeit and pay at the discretion of the said Mayor, Police Magistrate, Justices or other Magistrate or Magistrates convicting, a fine or penalty not exceeding the sum of one hundred dollars and costs for each offence, and in default of payment thereof forthwith, it shall be lawful for such Mayor, Police Magistrate, Justices or other Magistrate or Magistrates convicting as aforesaid to issue a warrant under his or their hand and seal to levy the said fine or penalty and costs, or costs only, by distress and sale of the offender's goods and chattels; and in case of no sufficient distress found to satisfy the said fine or penalty, it shall and may be lawful for the Mayor, Police Magistrate, Justices or other Magistrate or Magistrates convicting as aforesaid to commit the offender to the common gaol or any lock-up house in the City of Vancouver for any period not exceeding two months (with or without hard labour) unless the said fine or penalty be sooner paid.

9. By-law No. 1052 is hereby repealed.

10. This By-law may be cited as the "Tree Destruction By-law."

11. This By-law shall come into force and take effect from and after the date of the passing hereof.

DONE AND PASSED in open Council this 29th day of March, A.D. 1922.

CHARLES E. TISDALL,
Mayor.

(Seal)

WM. McQUEEN,
City Clerk.

APPENDIX 22.

City of Vancouver Boulevard
Tree Bylaw 1896

BOULEVARDS 1896

...ulevards of streets.

BE IT THEREFORE ENACTED by the Mayor and Council in open meeting assembled as follows:-

BOULEVARDS.

1. The owner or occupier of any lot abutting on any public street within the City may (having first obtained the permission in writing of the Board of Works or City Engineer) enclose with a railing of wood or iron not exceeding two feet six inches in height the street opposite to his lot on the side next the roadway to a distance of eighteen feet (24) feet where such street is 66 feet in width, twenty-four where street is 99 feet wide except so much thereof as shall be occupied by the sidewalk and the space so set apart is herein called and shall be known as a boulevard provided always that no boulevard shall be permitted on Westminster Avenue, Granville Street, North False Creek and all Streets north of and including Pender Street or where in the opinion of the Board of Works or City Engineer the railing of the same will incon-

venience the public or be otherwise objectionable.

2. Each boulevard shall be made to conform to the proper grade of the street having a proper fall from the sidewalk outwardly and shall be sodded or seeded with grass and clover seed and kept in good order free from noxious weeds or thistles (by order of Council).

3. No person shall put, pile, place or keep in or upon any boulevard within the City any lumber, [illegible]

[illegible] or
[illegible] or [illegible]).

3. No person shall put, pile, place or keep in or upon any boulevard within the City any lumber, building material, or other thing whatsoever other than a fence or railing therefor, shade trees and sod or grass, built, planted, sown or placed there in accordance with the provisions of this by-law.

4. No person shall use any boulevard within the City for the purpose of pasturing any horse, cow or any other animal thereon, and no person shall lead, drive or place any horse, cow or other animal in or upon any such boulevard or permit any horse, cow or other animal owned by him or being in his possession or under his control to go or be therein or thereon.

SHADE TREES.

5. Shade trees may be placed or planted in the

public streets of the City within the boulevards
at a distance of not less than two feet from the
edge of the curb with which same shall be as near-
ly as practicable in the centre of the boulevard
but nothing herein contained shall be taken to
authorize the planting of the trees known as silver
poplar, balm of gilead, cotton tree or willow and
the planting of the said trees is hereby
prohibited.

6. There shall be paid out of the general

prohibited.

6. There shall be paid out of the municipal funds of the City a bonus or premium of fifty (50) cents for each and every ash, basswood, beech, birch, cedar, chestnut, elm, hickory, maple, mulberry tree, and all other shade trees approved of by the Council which shall have been planted and kept in good order for the space of two years from the passing of this by-law on any boulevard in the City; to be paid on the certificate of the City Engineer.

7. Trees planted on streets shall be placed not less than 30 feet apart and where directed by the City Engineer acting under the instruction of the Board of Works.

8. No person shall break, injure, dig up or destroy any tree lawfully planted on the boulevard of the public highway on either

cord or any box, stake or guard which is placed around any tree for the protection of the same or such stakes or trees, grass or railing as are actually necessary may be used in connection in writing from the Board of Trees.

9. No person shall fasten a horse or other animal to a tree or to a case or box around a tree or near enough to injure the same to chain or rail enclosing the boulevard on the streets.

11. The owner and occupier of any lot or parcel

[illegible] to the [illegible]

[illegible] or [illegible] [illegible]

[illegible] to [illegible] [illegible] shall [illegible]

[illegible] and the boulevard on the streets.

10. The owner and occupier of any lot or parcel of land within the City opposite to which any tree is planted shall cause the same to be kept trimmed so that the projecting limbs and boughs shall not be less than 12 feet above the sidewalk.

11. It shall be the duty of the City Engineer for the time being to see that the provisions of this By-law relating to shade trees and boulevards are carried out.

PENALTY.

12. Any person convicted of a breach of any of the provisions of this By-law, shall forfeit and pay at the discretion of the convicting Magistrate, a sum not exceeding [illegible] dollars for [illegible] offence and costs, and in default of

-5-

payment of the said penalty and costs forthwith, the said penalty and costs, or the costs only may be levied by distress and sale of goods and chattels of the offender, and in case of there being no distress found out of which such penalty can be levied, the convicting Magistrate may commit the offender to the Common Gaol of the City of Vancouver with or without hard labour, for any period not exceeding twenty-one days, unless the said [illegible] costs be sooner paid.

[illegible] shall take effect on the 23rd day of [illegible].

Reconsidered and finally passed
on the 30th day of March 1910

[illegible]

[illegible] Council [illegible]

[illegible] Gaol of the City of Van-

[illegible] with or without hard labour, for any period

not exceeding twenty-one days, unless the said

penalty and costs be paid xx sooner paid.

Done and passed in open Council this 23rd day of

March A.D. 1896.

Reconsidered and finally passed
on the 30th day of March 1896

~~Mayor~~ Henry Collins
Mayor

Thos. Nelson
City Clerk.

APPENDIX 23.

City of Vancouver Boulevard
Tree Bylaw 1917

BY-LAW No. 940

A By-law relating to Boulevards and Shade Trees

(Including Amending By-law No. 1293)

The Mayor and Council of the City of Vancouver in open meeting assembled enact as follows:

BOULEVARDS.

1. The owner or occupier of any lot abutting on any public street within the City may (having first obtained the permission in writing of the Committee on Works) enclose with a chain, fence or railing of wood or iron, not exceeding two feet six inches in height, the street adjoining and co-extensive with the front of his lot to a width of eighteen feet where such street is 66 feet in width, and twenty-four feet where such street is 99 feet wide, except so much thereof as shall be occupied by the sidewalk; and the space so enclosed is herein called and shall be known as a boulevard.

2. Such boulevard shall be made to conform to the existing grade of the street, having a proper fall from the sidewalk outwardly, and shall be sodded or seeded with lawn grass seed and kept in good order free from noxious weeds or thistles by the owner or occupier of the lot which the same adjoins.

3. No person shall put, pile, place or keep in or upon any boulevard within the City any lumber, building material or other thing whatsoever other than such chain, fence or railing, shade trees and sod or grass, built, planted, sown or placed thereon in accordance with the provisions of this By-law.

4. No person shall use any boulevard within the City for the purpose of pasturing any horse, cow or any other animal thereon, and no person shall lead, drive or place any horse, cow or other animal in or upon any such boulevard or permit any horse, cow or other animal owned by him, being in his possession or under his control, to go or be therein or thereon.

5. All trees, saplings or shrubs planted in any boulevard of the City shall be deemed to be the property of the City; and the control of such trees, saplings or shrubs are hereby declared to be under the care and control of the Board of Park Commissioners. (By-law 1293, May 21, 1917)

6. No person shall plant any trees, saplings or shrubs on any boulevard of the City without having first obtained a written permit from the Board of Park Commissioners. Such permit shall specifically describe the work to be done under it, and shall lapse within a period of thirty (30) days from the date of the issue. (By-law 1293, May 21, 1917)

7. Upon the receipt of an application for the planting of any tree, sapling, or shrub, the Park Superintendent shall investigate the locality where such trees or shrubs are desired to be planted, and the Board of Park Commissioners shall grant a permit only if, in their judgment, the location is such as to permit the normal growth and development of such trees or shrubs. The permit shall specify the location, variety and

grade of such trees or shrubs, and the method of planting, including among other things the supplying of suitable soil and stake for the support of such tree or shrub. No charge shall be made for the permit, and no trees shall be planted except in accordance with its terms. (By-law 1293, May 21/17)

8. No person shall plant any tree, sapling, or shrub on any boulevard in the City of Vancouver, and under the control of the Board of Park Commissioners, unless the following conditions are complied with, and the work done to the satisfaction of, and under the supervision of, the Park Superintendent. The trees shall be of a diameter at the base (four inches from the ground) of not less than 1½ (one and one-half) inches nor more than six (6) inches; and not less than eight feet in height; and of the kind approved by the Board of Park Commissioners, provided, however, that such dimensions shall not be applied to trees which it may be necessary to remove and transplant as provided in Clause 15 of this By-law; and said trees shall not be construed to include those usually classified as shrubs, and which from their natural habits do not usually grow to a height higher than fifteen (15) feet. (By-law 1293, May 21, 1917)

9. No tree or sapling shall be planted unless there is a clear space between the trees so planted of not less than thirty (30) feet. Shrubs may be planted between trees at intervals of not less than ten (10) feet. Neither shall any tree, sapling, or shrub be planted where the clear space between the curb and sidewalk or property line and sidewalk is less than three (3) feet. (By-law 1293, May 21st, 1917)

10. No person shall remove, destroy, cut, deface, trim or in any way injure or interfere with any tree, sapling or shrub on any boulevard, except as expressly authorized to do so by the Board of Park Commissioners, provided that nothing in this section shall be construed to prevent such Board from properly trimming and caring for such trees and shrubs. Further provided that persons desirous of pruning or trimming any such trees, sapling or shrub at their own expense, may do so on application being made to the Board of Park Commissioners and approved, which shall contain an undertaking that such pruning or trimming shall be done by a competent person under the supervision of the Park Superintendent. (By-law 1293, May 21st, 1917)

11. No building material or any other material of any description shall be piled up against any boulevard tree, sapling or shrub unless said tree, sapling or shrub is first sufficiently protected by a proper guard to prevent possible injury, and all instructions issued for that purpose by the Park Superintendent must be promptly complied with by the owner. (By-law 1293, May 21st, 1917)

12. No person shall hitch or fasten any horse or any other animal to any tree, sapling or shrub on any boulevard, nor shall any person suffer or permit any horse or animal to stand or be near enough to such tree, sapling or shrub to bite, rub against, or in any manner injure or deface the same. (By-law 1293, May 21, 1917)

13. No person shall remove any building along any street in such a way as to interfere with or injure any tree, sapling, or shrub on any boulevard, without a special permit obtained from the Board of Park Commissioners. The application shall specify the building and the proposed route. (By-law 1293, May 21, 1917)

14. All moving of trees and shrubs made necessary for the moving of such building or any other purpose shall be done by the Board of Park Commissioners, or under the supervision of the Park Superintendent, at the expense of the applicant. Should such moving or re-planting cause the death of such trees or shrubs the applicant shall replace same at his expense. Before such permit is granted the applicant shall deposit at least $10.00 per tree, and as much more as the Board of Park Commissioners may deem necessary to cover the actual expense of removing and replanting, if necessary, to be retained until said tree or its successor is permanently established; provided that such deposit shall not be held for a longer period than three months after the planting of any such tree, sapling or shrub. (By-law No. 1293, May 21, 1917)

15. The Board of Park Commissioners shall have power to destroy, remove, transplant, or otherwise dispose of trees or shrubs on any boulevard if infected by disease or infected by injurious insects when such destruction is necessary for the protection of other trees, or if the said trees or shrubs are planted too close to one another to prevent their proper growth, or for any other good and sufficient reason which the Board of Park Commissioners may deem proper, or if said trees or shrubs are not in true alignment with the established line. (By-law No. 1293, May 21, 1917)

16. The Board of Park Commissioners shall have power to remove any wire conduit or other thing that burns, cuts or chafes any part of any tree, sapling or shrub, whether trunk, root or branch, on any boulevard, in case the owner of the wire shall fail after three (3) days' written notice to take adequate steps to prevent further injury. (By-law No 1293, May 21, 1917)

Any person guilty of an infraction of this By-law shall upon conviction thereof before the Mayor, Police Magistrate or any two justices of the Peace, or other Magistrate or Magistrates having jurisdiction in the City of Vancouver on the oath or affirmation of any credible witness, forfeit and pay at the discretion of the said Mayor, Police Magistrate, Justices, or other Magistrate or Magistrates convicting, a fine or penalty not exceeding the sum of One Hundred ($100.00) dollars and costs for each offence, and in default of payment thereof forthwith, it shall be lawful for such Mayor, Police Magistrate, Justices or other Magistrate or Magistrates convicting as aforesaid, to issue a warrant under his or their hand and seal to levy the said fine or penalty and costs, or costs only, by distress and sale of the offender's goods and chattels; and in case of no sufficient distress found to satisfy the said fine or penalty, it shall and may be lawful for the Mayor, Police Magistrate, Justices or other Magistrate or Magistrates convicting as aforesaid to commit the offender to the common gaol, or any lock-up house in the City of Vancouver for any period not exceeding two months (with or without hard labor) unless the said fine or penalty be sooner paid. (By-law 1293, May 21, 1917)

DONE AND PASSED in open Council this 21st day of October, 1912.

MAYOR

CITY CLERK

APPENDIX 24.

City of Vancouver Arbor Day
Bylaw 1917

BY-LAW NO. 1290.

A By-law to proclaim a "Civic Arbor Day".

THE MAYOR AND COUNCIL of the City of Vancouver in open meeting assembled enact as follows:-

1. It shall be the duty of the Mayor to officially proclaim a day to be known as "Civic Arbor Day" to be held between the first day of February and the 30th day of April in each and every year, which day shall mark the commencement of the period when trees and shrubs may be planted on the boulevards of the City by the Citizens; and such day shall be the recognized date for the celebration of "Arbor Day" or tree planting ceremonies held under the auspices of the Board of Park Commissioners or any schools or other organizations throughout the City.

2. Such trees or shrubs shall be supplied by the Board of Park Commissioners, if such Commissioners shall have such trees in stock, but any person shall be permitted to supply their own trees or shrubs provided that such trees or shrubs are first approved of by the Board of Park Commissioners.

2. Such trees or shrubs shall be supplied by the Board of Park Commissioners, if such Commissioners shall have such trees in stock, but any person shall be permitted to supply their own trees or shrubs provided that such trees or shrubs are first approved of by the Board of Park Commissioners.

3. All trees planted on the boulevards shall be planted in conformity with By-law No. 940 of the City and amendments thereto.

4. This By-law shall come into force and take effect from and after the date of the passing thereof.

DONE AND PASSED in open Council this 12th day of March, A. D. 1917.

Mayor.

City Clerk.

ARBOUR-DAY BY-LAW.

By-law No. 1290.

A by-law to proclaim a Civic Arbour Day.

THE MAYOR AND COUNCIL of the City of Vancouver in open meeting assembled enact as follows:

1. It shall be the duty of the Mayor to officially proclaim a day to be known as the "Civic Arbour Day," between the first day of February and the 30th day April in each and every year, which day shall mark the commencement of the period when trees and shrubs may be planted on the boulevards of the City by the citizens; and such day shall be the recognized date for the celebration of "Arbour Day," or tree-planting ceremonies, held under the auspices of any schools or other organizations throughout the City.

2. Such trees or shrubs shall be supplied by the Board of Park Commissioners, if such Commissioners shall have such trees in stock; but any person shall be permitted to supply their own trees or shrubs, provided that such trees or shrubs are first approved by the Board of Park Commissioners.

3. All trees planted on the boulevards shall be planted in conformity with By-law No. 940 of the City and amendments thereto.

4. This by-law shall come into force and take effect from and after the date of the passing thereof.

DONE AND PASSED in open Council this 12th day of March, A.D.1917.

MAYOR.

CITY CLERK.

APPENDIX 25

Extracts from the City of Vancouver Charter concerning Boulevard Trees

Streets and parks vested in city.

289. (1) Unless otherwise expressly provided, the real property comprised in every street, park, or public square in the city shall be absolutely vested in fee-simple in the city subject only to section 291A of this Act and to any right therein which the person who laid out or dedicated such street may have expressly reserved; provided that section 5 of the *Highway Act* shall not apply to any street, park, or public square aforesaid; provided further, however, that it shall be lawful for the city to acquire from any person rights or easements for street, park, or public square purposes less than the fee-simple, whether on, above, or below the surface of any real property owned by such person.

(2) In the application of section 112 of the *Land Registry Act* to any subdivision of land in the City of Vancouver the said section 112 shall be construed as if for the words " land " and " highway " wherever they occur the words " real property " and " street " respectively were substituted and for the words " Crown in the right of the Province " in the second line and the words " the Crown " in the fifth line in subsection (2) thereof were substituted the words " the City of Vancouver." This subsection shall have a retrospective as well as a prospective effect.

(3) The Registrar of the Vancouver Land Registration District may accept evidence of a transfer of any real property in the city for street, park, or public square purposes in the form of a conveyance duly executed by all persons required by law to execute a conveyance thereof or by a plan only, if so executed, in lieu of or in explanation of a conveyance to the city of such real property if such plan is otherwise satisfactory to the Registrar aforesaid. The Registrar may require that such plan shall show the boundaries of any land remaining in the parcel after such transfer. 1953, c. 55, s. 289; 1953 (2nd Sess.), c. 47, s. 5; 1958, c. 72, s. 16.

Protection of streets.

290. No person shall excavate in, cause a nuisance upon, encumber, obstruct, injure, foul, or otherwise damage a street, except under such terms and conditions as may be imposed by the Council. 1953, c. 55, s. 290.

291. The Council may provide

Provision for establishing streets.

(*a*) for establishing, laying out, opening, maintaining, and improving streets, and for determining the width and boundaries of streets;

Stopping up.

(*b*) for stopping up any street, or part thereof, and, subject to section 190, for disposing of any street, or part thereof, so stopped up;

Diverting.

(*c*) for widening, altering, or diverting a street or part thereof;

Prohibiting obstructions.

(*d*) for the prohibition and removal of any unauthorized encroachment or obstruction under, upon, or over a street, or any part thereof;

Grades.

(*e*) for establishing a grade or level for any street, or any part thereof;

Bench-marks.

(*f*) for establishing and maintaining survey monuments and bench-marks;

(*g*) for regulating

Access to and from streets.

(i) the means of access to and from the street of any parcel abutting thereon and providing for the use of so much of the street as may be designated for the purpose of such access;

Encroachments on streets.

(ii) encroachments for a stipulated length of time upon, under, or over a street,

upon such terms as to rental, indemnity, or otherwise as may be prescribed, and, where it is deemed necessary, upon condition that the city shall have a registered charge upon the parcel to which such access or encroachment is appurtenant for the due performance of any term so prescribed and for the payment of any sums of money due the city for rental or otherwise, and for providing that any such sums may be inserted in the real-property tax roll as a charge imposed with respect to such parcel. Any provision in an agreement with the city purporting to create a charge against any parcel aforesaid, for the due performance of any terms prescribed as aforesaid, or for the payment of any sums of money aforesaid, may be registered as a charge against the interest in such parcel of the person making the agreement;

Snow and ice removal from roofs.

(*h*) for requiring the owner and occupier of any real property to remove snow and ice from the roof or other part of any structure thereon;

From sidewalks.

(*i*) for requiring the owner of any real property, in such areas as may be designated by by-law, to remove snow and ice from the sidewalk adjacent to such real property and, in case of his default, for removing such snow and ice at the expense of the owner and for recovering the expense of such removal from the person so defaulting;

Cleanliness of streets.

(*j*) for prohibiting persons from depositing upon a street or on any other land without the approval of the owner any rubbish, sweepings, paper, hand-bills, refuse, or other discarded materials or things;

Ornamental trees.

(*k*) for regulating the planting and care of shade or ornamental trees upon a street, and for prohibiting the injury or destruction of such trees;

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Their trimming.

(*l*) for causing any tree upon a street to be trimmed or removed when deemed necessary in the public interest;

Watercourses not to be obstructed.

(*m*) for prohibiting any person from obstructing or impeding the flow of any stream, creek, watercourse, drain, or sewer;

Maps may be used.

(*n*) for the use of maps of real property, approved by the City Engineer, in a by-law in place of, or in addition to, a detailed

ards Association with respect to electrical works, and constituting as regulations under the by-law the rules and provisions so adopted or modified;

(*f*) for regulating the placing or maintenance in any street of any electrical works, including the poles or other means of support thereof;

(*g*) for requiring that any person permitted to erect any poles in a street shall afford to the city reasonable accommodation thereon for such wires or other equipment as may be required for the purposes of the city upon such terms as may be agreed upon or, failing agreement, upon terms to be fixed by arbitration under the *Arbitration Act;*

(*h*) for the construction of underground conduits in streets, and for permitting the use thereof for telegraph and telephone cables and other electrical works upon such terms and conditions, to such extent and for such charges, as may be prescribed in the by-law;

(*i*) for the lighting of streets, squares, and other city property by the erection, construction, and installation of light standards or by any other means;

(*j*) for contracting for the supply of electrical energy for the purpose of lighting streets, squares, and other city property.

(2) Nothing in section 313, except in so far as it relates to electrical works (elsewhere than in a generating plant or substation) designed or intended for use for or in connection with the final consumption of electrical energy, and nothing in subsection (1) of this section, except clauses (*f*), (*g*), (*h*), and (*i*), shall apply to any electrical works maintained and used by any electric light, electric power, or street-railway company or transportation company operating trolley-coaches.

(3) The powers conferred on the Council by the said clause (*f*) shall not be used

(*a*) to require any of the said companies to remove any presently existing electrical works or any renewal thereof, or to move the same to any new location, except upon condition that the city shall pay reasonable compensation to such company for the expense and loss of and from such removal or moving, the amount thereof to be such as the city and such company may agree upon or, in the event of failure to agree, as may be settled by arbitration pursuant to the *Arbitration Act;* or

(*b*) with respect to underground duct banks or vaults of any of the said companies, except as to the position and over-all size thereof.

(4) The Council may make by-laws for regulating the placing and maintenance in any street by any gas company of gas-pipes, governors, regulators, and other equipment and apparatus used in connection with

the transmission or distribution of gas. 1953, c. 55, s. 314; 1961, c. 76, s. 6.

Water powers.

315. Subject to the provisions of the *Water Act*, the Council may provide for the diversion and use of water, within or without the city, for power purposes, and may cause any water-power project to be examined, investigated, and reported upon, and may acquire, develop, establish, equip, operate, and maintain the necessary dams, plant, works, and buildings for the purpose of producing and conveying to the city electrical energy or other power produced by the use of water, and may use, for the purposes of the city, or dispose of any energy or power so produced. 1953, c. 55, s. 315.

Saving clause.

316. Nothing in this Act shall be held to affect or impair any contract with the city or any rights, powers, or privileges now had or enjoyed under its Act of incorporation or any special Act by a public utility as the same is defined by the *Public Utilities Act*. 1953, c. 55, s. 316.

PART XII

STREET TRAFFIC

By-laws—

317. The Council may make by-laws

Regulating traffic.

(*a*) for regulating pedestrian, vehicular, and other traffic and the stopping and parking of vehicles upon any street or part thereof;

Persons to give name and address to constable.

(*b*) for authorizing a police constable to arrest without warrant any person whom he finds committing a breach of any provision of a by-law passed pursuant to the provisions of this Act respecting traffic if such person shall fail to stop and state his name and address when so requested by such police constable;

Classification of vehicles.

(*c*) for defining and classifying vehicles, and for differentiating and discriminating between classes of vehicles in the exercise of any of the powers of the Council with respect to the use of streets;

Speeds may be fixed.

(*d*) notwithstanding anything contained in the *Motor-vehicle Act*, for regulating and fixing the rate of speed of all vehicles, or of any class of vehicles, on any street in any zone, place, or area designated by by-law;

Coasting.

(*e*) for regulating coasting or sliding by means of sleds, skis, skates, or the like on any street or part thereof;

Classification of streets.

(*f*) for classifying streets and parts thereof and differentiating between classes of them in the exercise of any of the powers of the Council with respect to the use of streets;

Vehicles may be banned.

(*g*) for fixing the times when and the terms upon which all or certain classes of vehicles may or may not be used on any particular street or part thereof;

Carriers.

(*h*) for defining and classifying carriers, whether of persons or chattels, and for differentiating and discriminating between classes of carriers in the exercise of any of the powers of the Council with respect to carriers;

Their routes.

(*i*) for fixing routes to be taken by carriers of persons or chattels using any street;

Charges by carriers.

(*j*) subject to the provisions of the *Motor Carrier Act,* for fixing the maximum and minimum charges to be made by such carriers or any class thereof, which charges may be based upon zones or districts designated by by-law;

Powers may be assigned to board.

(*k*) for providing that, subject to an appeal to the Council in accordance with the procedure prescribed by by-law, the Council may delegate to a board appointed by the Council any or all the powers vested in the Council with respect to the operation by carriers of any vehicle on any street, including the powers contained in section 272 as to licensing and regulation and in clause (*j*) of this section as to charges to be made by carriers and in clause (*m*) of this section as to limiting the number of vehicles with respect to which persons may be licensed in any class of carriers;

Chauffeurs.

(*l*) for regulating chauffeurs and other drivers of vehicles used by carriers on a street in connection with their business;

Limiting licences.

(*m*) subject to the *Public Utilities Act,* for regulating the number of vehicles with respect to which persons may be licensed in any class of carriers;

Bicycle registration.

(*n*) for regulating the use of bicycles, or other vehicles propelled by human muscular power, on any street or other public place, and for compelling the owners thereof to register the same annually pursuant to regulations provided by by-law, and for imposing a fee for such registration not exceeding one dollar per annum for each such vehicle;

Carrier to carry insurance.

(*o*) for making it a condition of the granting and holding of any licence to a carrier that such carrier

(i) be the holder of a subsisting policy of insurance issued by an insurer authorized to carry on business in the Province, or by Lloyd's, in such amounts and against such hazards as shall be specified in the by-law; or

(ii) has given proof of financial responsibility pursuant to the *Motor-vehicle Act,* the *Public Utilities Act,* or the *Motor Carrier Act*

covering every vehicle in respect of which such carrier is licensed;

Testing of vehicles.

(*p*) (i) for fixing standards of safety and of repair to be required of vehicles other than trolley-coaches, while parked or being operated on any street, and for requiring the owners and operators of such vehicles to present the same for inspection as to

detention or impounding, including towing, storage, and other charges, and for enabling the city to collect such expenses by the sale of the vehicle or other chattel at public auction or private sale as directed by the by-law or by action in any Court of competent jurisdiction, and for providing that any other vehicle which comes into the hands of the police shall be held and dealt with in accordance with the provisions of the by-law;

(*dd*) for delegating to the Board of Park Commissioners all or any of the powers of the Council with respect to traffic upon a street, or portion of a street, in a park, as defined in Part XXIII of this Act;

(*ee*) for acquiring by conveyance, lease, licence, or otherwise any property for the parking of vehicles, for providing and maintaining thereon the necessary buildings and equipment therefor, for operating and managing the business of affording parking accommodation thereon, and for entering into leases or other agreements with any person desiring to take over such property or to commence, carry on, manage, or take over such business upon such terms and conditions as may be deemed advisable by Council. 1953, c. 55, s. 317; 1954, c. 65, s. 4; 1955, c. 114, s. 11; 1959, c. 107, s. 19; 1963, c. 60, ss. 13, 14; 1967, c. 49, s. 14; 1968, c. 71, ss. 15, 16.

318. The Council may provide

Stop-signs, etc.

(*a*) for locating, establishing, and maintaining on any street such traffic signs, stop-signs, traffic lights or reflectors, traffic disks, markers, blocks, standards, indicators, traffic-control signals, or other devices or apparatus, whether automatic or manual, as may be deemed necessary for the regulation, direction, and control of traffic on any street, and for delegating to the City Engineer, or such other person as shall be named for the purpose, any or all the powers of locating, establishing, and maintaining mentioned in this clause;

School crossings.

(*b*) for authorizing the City Engineer or other person to designate by traffic signs and markings such portions of streets as in his discretion should be designated as school crossings or playground crossings, and, notwithstanding anything contained in the *Motor-vehicle Act,* for regulating traffic at such crossings, and for inflicting a minimum fine of fifteen dollars for any breach of such regulations;

One-way traffic.

(*c*) for designating certain streets, or portions of streets, upon which at all times, or during specified hours, vehicular traffic may move only in a named direction;

Emergency powers for constables.

(*d*) for empowering police constables to give directions during an emergency for the regulation or diversion of traffic upon a street in cases where

(i) it is necessary or desirable to expedite traffic or relieve traffic congestion; or

(ii) it is necessary to deal with accidental or other unexpected conditions affecting traffic; or

(iii) the safety of persons or property will be protected;

and for requiring that all persons shall comply with any direction so given, notwithstanding that it is at variance with a traffic-control signal, traffic sign, or the like. 1953, c. 55, s. 318; 1960, c. 80, s. 5.

319. The Council may make by-laws

Parades.

(*a*) for regulating parades and processions in or along any street, and for delegating to the Chief Constable the power to grant or refuse permits for such parades or processions and, when granted, to prescribe the routes of travel to be followed so as to prevent undue interference with other street traffic;

Gathering on street.

(*b*) for regulating the assembling or gathering of persons in or upon a street;

Sales on streets.

(*c*) for regulating the sale, or the offering or exposing for sale, of any merchandise or thing upon a street;

Advertising on streets.

(*d*) for regulating the exhibiting or placing of advertising-matter on, in, or above any street or on any pole or projection therein, including the billboards, hoardings, or other means used in connection with such advertising-matter;

Distributing advertising-matter.

(*e*) for regulating the distribution of advertising-matter to persons or vehicles on any street, and for prohibiting persons from distributing any such matter if it is likely to be thrown or left upon a street. 1953, c. 55, s. 319.

320. The Council may make by-laws

Signs on streets.

(*a*) for regulating signs and for defining the same, and may provide for the fixing and collecting of a charge for signs projecting into or being in a street;

Street names and signs.

(*b*) for assigning names to streets and changing the names so assigned when deemed necessary, and affixing or otherwise displaying of such names at street corners or other convenient places either on a street or on private property. 1953, c. 55, s. 320; 1965, c. 68, s. 26.

Filings to be made.

321. The Council may cause the necessary filings with respect to such naming or changing of names to be made in the Land Registry Office or elsewhere. 1953, c. 55, s. 321.

Removal of rubbish.

(*m*) for requiring the owner or occupier of any real property to remove therefrom any accumulation of rubbish, discarded materials, garbage, ashes, or filth, and lawfully to dispose of the same, and for providing that in default of such removal the city may, by its workmen or others, enter and effect such removal at the cost of the person so defaulting;

Transportation of offensive material.

(*n*) for regulating the transportation upon any street of offal, decayed materials, or other offensive matter or thing;

Smoke and dust regulation.

(*o*) for regulating the emission of smoke, dust, gas, sparks, ash, soot, cinders, fumes, or other effluvia into the air from any building or premises, boat, ship, or vessel, and for requiring every owner or occupier of such building or premises and the owner or master of any boat, ship, or vessel to take such precautions and make such changes in, or additions to, any combustion-chamber, chimney, flue, stack, or equipment from or through which such emission takes place as will eliminate or reduce such emission to the extent required by the by-law;

Scale of density of emissions.

(*p*) for establishing or adopting a scale for grading the density of such emissions and for fixing degrees of density not to be exceeded in respect of such emissions;

Permit for certain equipment.

(*q*) for requiring persons constructing or installing combustion-chambers of any kind or any apparatus or equipment by which such emissions are caused to obtain a permit from the city before commencing such construction or installation, and for authorizing the withholding of such a permit unless the provisions of the by-law are complied with;

Brush and weeds to be cleared.

(*r*) for requiring the owner or occupier of any parcel to clear the same of brush, trees, noxious weeds, or other growths, and, in default, for empowering the city, by its workmen or others, to enter and effect such clearing and to enter the cost thereof in the real-property tax roll with respect to such parcel;

Disposal of waste.

(*s*) for requiring manufacturers and processors to dispose of the waste from their plants in the manner directed by the by-law;

Mill-waste.

(*t*) for defining mill-waste, and for regulating the disposal thereof, and for compelling the owners or operators of mills of all kinds to dispose of mill-waste in the manner directed by the by-law;

Standard of maintenance.

(*u*) for requiring the owners or occupants of real property to maintain the said property in a neat and tidy condition and in keeping with a reasonable standard of maintenance prevailing in the neighbourhood. 1953, c. 55, s. 323; 1955, c. 114, s. 12; 1958, c. 72, ss. 22, 23; 1966, c. 69, s. 13.

324. The Council may make by-laws providing

Impounding of animals.

(*a*) for the seizure, impounding, and detention of unlicensed dogs and of dogs, horses, cattle, and other animals unlawfully permitted to be upon a street or at large;

Pound charges.

(*b*) for reasonable charges to be imposed by the city for their seizure, impounding, and detention and their maintenance while impounded;

Disposition of impounded animals.

(*c*) for their sale or destruction in cases where such charges are not paid or where under the terms of the by-law such sale or destruction is prescribed;

Pounds.

(*d*) for establishing and maintaining such buildings, yards, enclosures, and other facilities for the keeping and disposition of impounded animals as may be necessary;

Pound-keeper.

(*e*) for the appointment of a pound-keeper and assistants;

Dogs to be muzzled.

(*f*) for requiring that owners, possessors, and harbourers of dogs, or any class of dogs, shall keep them effectively muzzled while they are at large or upon a street, or shall keep them on leash, or under the control of a competent person while upon a street, as the by-law may direct;

Keeping of animals.

(*g*) for regulating the keeping of horses, dogs, cows, goats, swine, rabbits, and other animals, and for defining areas within which such animals may be kept or within which the keeping of them is prohibited;

Regulations of kennels, etc.

(*h*) for regulating kennels or other places for the care, breeding, hospitalization, or boarding of cats, dogs, or other animals, including mink, foxes, and other undomesticated animals, and for defining areas within which such kennels or places shall be permitted or within which they are prohibited;

Keeping of birds.

(*i*) for regulating the keeping of domestic poultry, pigeons, and other birds, and for defining areas within which such birds may be kept or within which the keeping of them is prohibited. 1953, c. 55, s. 324.

Enforcement of provisions of by-law re nuisance.

324A. (1) The Council may, by resolution or by by-law, declare any building, structure, tree, or erection of any kind whatsoever, or any drain, ditch, watercourse, pond, surface water, or any other matter or thing in or upon any private or public lands, street or road, or in or about any building or structure, a nuisance or dangerous to the public safety or health, and may, by such by-law or resolution, as may be directed therein, order that the same shall be removed, pulled down, filled up, or otherwise dealt with by the owner, agent, lessee, or occupier thereof, as the Council may determine, and within such time after the service of the order as may be therein named. Service of the order so made shall be effected by sending a copy of the order by return registered mail to the owner of the lands upon which such building, structure, tree, or erection stands, and to all other persons whose names appear on the records of the Land Registry Office as having an interest in the said lands, and to the agent, if known, of the registered owner thereof, and to the occupier thereof, if any; the same to be sent to the last-known address of each interested person herein referred to; provided that if the occu-

And for skating, etc.

(*o*) designating areas in the parks where persons may skate, ski, or sleigh, and for the supervision and control of persons engaged in such activities;

Council may add to powers.

(*p*) doing such other things with respect to any of the parks as the Council shall from time to time authorize;

Implementing powers.

(*q*) doing such other things in furtherance of any of the above powers as shall be deemed expedient. 1953, c. 55, s. 489.

Power of Board to perform works.

489A. The Council may authorize the Board, and the Board when so authorized shall have power, to perform any works and provide any services with respect to real property not within the parks for any non-profit or charitable institution in any case where the Council deems such works or services to be to the general advantage of the city and that such institution is performing a work or service for the public benefit, and the city may enter into an agreement with such institution for the performance of such works or provision of such services if Council deems it expedient. 1961, c. 76, s. 8.

Board's power of leasing, etc.

490. The Council may delegate to the Board the power in the name of the city to permit any person to occupy any building or place, or any part thereof, in a park, under lease, licence, or otherwise, for such remuneration, upon such terms, and for such length of time, not exceeding five years, as the Board may deem expedient. 1953, c. 55, s. 490.

Board's power to make by-laws.

491. In the exercise of any of its powers, the Board may from time to time pass, amend, and repeal by-laws (not inconsistent with any by-law passed by the City Council) to be observed in the parks, or any of them, for the control, regulation, protection, and government of the parks and of persons who may be therein, including

Excluding animals, etc.

(*a*) the exclusion from any of the parks, or any part thereof, of any animal or vehicle;

Controlling assemblies.

(*b*) the assembling or gathering of persons in any of the parks, and, if deemed necessary, the prohibition of such assemblies or gatherings;

Regulating signs.

(*c*) the regulation of advertising or signs of any kind in any of the parks;

Mischief may be forbidden.

(*d*) prohibiting persons from damaging trees, shrubs, flowers, or other growing things, or fences or other property, in the parks; and from depositing rubbish, bottles, paper, or other discarded materials in the parks;

Procedure at Board's meetings.

(*e*) the procedure and conduct of the meetings of the Board and the selection of a Chairman thereof. 1953, c. 55, s. 491.

Board's estimates to be submitted each year.

492. The Board shall, at the beginning of each year, cause to be prepared and submitted to the Council a detailed estimate of the receipts from every source, and of the expenditures of the Board of every kind, during that year, showing the amount estimated to be necessary for the purposes of the Board up to the thirty-first day of December next there-

PART XXIV

LOCAL IMPROVEMENTS

Interpretation.

498. In this Part, unless the context otherwise requires,

"assessed owner" means the person appearing by the records kept by the Assessment Commissioner to be the owner of any parcel of real property, unless it appears by such records that the parcel is held by an owner under agreement, in which case "assessed owner" means such owner under agreement. In the case of a parcel of Crown lands it shall mean the occupier of the said parcel;

"cost of the project" may include

(*a*) surveying and engineering expenses;

(*b*) cost of advertising and of mailing notices;

(*c*) interest on temporary loans;

(*d*) interest during construction;

(*e*) compensation for real property acquired for the purpose of the project or injuriously affected by it, and the expense incurred by the city in connection with the determination of such compensation;

(*f*) the estimated cost of the issue and sale of debentures and of any discount allowed to the purchasers of them. 1953, c. 55, s. 498; 1957, c. 85, s. 19.

Mailing of notices.

499. For the purposes of this Part, a notice shall be deemed to be mailed to a person if it is mailed, addressed to such person at his actual place of residence or of business, if known, or at his address as it appears in the records kept by the Assessment Commissioner. 1953, c. 55, s. 499.

Local improvement projects.

500. (1) When, in the exercise of any of its powers of effecting and carrying out any works, improvements, or services, the Council deems that any such works, improvements, or services will specially benefit real property in a limited and determinable area, the Council may from time to time, subject to the provisions of this Part, undertake and carry out such works, improvements, or services (in this Part referred to as "projects") and pass by-laws (herein referred to as "local improvement by-laws") for borrowing on the general credit of the city such sums as may be necessary to defray the cost of any such project and for levying and collecting taxes based on special assessments imposed, save as hereinafter provided, upon the real property so deemed to be specially benefited, for the payment of all or any part of such cost.

(2) Instead of passing a separate by-law for each such project, the Council may pass one by-law in respect of several projects.

(3) [*Repealed.* 1961, c. 76, s. 9.] 1953, c. 55, s. 500; 1957, c. 85, s. 14; 1960, c. 80, s. 9; 1961, c. 76, s. 9.

Property-owner's share of the cost.

501. The amount of taxes so to be levied and collected (herein referred to as the "property-owners' share of the cost") shall be apportioned against the individual parcels of real property in the area in proportion to their respective special benefits on the basis and in the manner prescribed by by-law. 1953, c. 55, s. 501.

City's share of the cost.

502. Any part of the cost of a project not so to be levied and collected (hereinafter referred to as "the city's share of the cost") shall be paid by the city, and the Council may from time to time, by by-law, provide for such payment out of the general revenue of the city, or out of capital funds raised by the issue of debentures upon the general credit of the city at large for the purpose of creating a general fund to provide the city's share of the cost of local improvements either before or after the initiation, commencement, or completion thereof. 1953, c. 55, s. 502; 1955, c. 114, s. 15.

Crown, how dealt with.

503. The amount of taxes that would otherwise be collected under this Part from the Crown shall be paid by the city, unless the Crown pays them or their equivalent voluntarily. 1953, c. 55, s. 503.

Property otherwise exempt may be taxed.

504. (1) Every parcel of real property which is exempt from real-property taxation under Part XX, except Crown lands and real property vested in the city or the Board of School Trustees of School District No. 39 (Vancouver), shall nevertheless be liable to be specially assessed and to be taxed under this Part.

(2) Notwithstanding the provisions of subsection (1), the following lands shall also be liable to be specially assessed and taxed under this Part:—

(*a*) The right or interest of an occupier of Crown lands:

(*b*) Any parcel of real property vested in the city which Council by resolution has declared to be liable to be specially assessed and taxed under this Part with respect to the project specified in the resolution. 1953, c. 55, s. 504; 1961, c. 76, s. 10; 1963, c. 60, s. 15; 1967, c. 63, s. 9.

Borrowing for project.

505. The Council may, pending the completion of a project, borrow from any bank or other person, by way of temporary loans, the necessary amounts to meet the cost of the project, and upon such completion may pass a by-law for the issue of debentures to repay such temporary loans. 1953, c. 55, s. 505.

How projects promoted.

506. The Council may, in its discretion, undertake and carry out a project in any of the following cases:—

By petition of owners.

(1) By petition: If there has been filed with the City Clerk a sufficiently signed petition praying that a work, improvement, or service, claimed to be of special benefit to real property in a limited and determinable area designated in the petition, be undertaken and carried out. The petition shall be deemed to be sufficiently signed if at least two-

thirds in number of the assessed owners as at the date of the filing, representing at least one-half the value according to the last revised real-property assessment roll of the parcels liable to be specially assessed, have signed the petition; or

On initiative of Council.

(2) On the initiative of the Council:

(*a*) If the Council, by resolution passed by at least two-thirds of all the members present, has declared that it is desirable that a work, improvement, or service which the Council deems will specially benefit the real property in a limited and determinable area designated in the resolution be undertaken and carried out; and

Provision for objections.

(*b*) If, after notice of the Council's intention to undertake the project has been mailed to the assessed owners of the parcels liable to be specially assessed, and after the later publication of a general notice in at least two issues of a daily newspaper circulating in the city, a sufficient number of notices of objection to the project has not been filed with the City Clerk during the period of one month after the last publication of such notice. The notice so to be mailed shall be sufficient if it sets out in general terms

(i) a description of the project;

(ii) the designated area;

(iii) the estimated total cost of the project and the city's share of the cost;

(iv) the estimated annual rate per front foot or otherwise to the person notified;

(v) the number of annual payments to be required.

A sufficient number of notices of objection to a project shall be deemed to be filed if at least more than one-half in number of the then assessed owners, representing at least more than one-half of the value according to the last revised real-property assessment roll, of the parcels liable to be specially assessed have, in writing, given notice to the City Clerk within the time above prescribed that they object to the project.

On special grounds.

(3) On special grounds: If the Council, by resolution passed by two-thirds of all its members, has declared that it is necessary in the public interest that in a limited and determinable area designated in the resolution any of the following works, improvements, or services should be undertaken or carried out:—

(*a*) The construction, enlargement, or extension of any system of sewerage or drainage which the Council deems will specially benefit the real property in the area; or

(*b*) The acquisition of real property for establishing or enlarging a lane where the Council deems that such acquisition will specially benefit the real property in the area; or

(*c*) Upon a street designated in the resolution,

(3) The special assessment imposed pursuant to subsection (1) shall be deemed to be a tax and shall be collected by the city in the same manner and at the same time as the payment of real-property taxes within the city.

(4) Subsections (2) and (3) of section 510 shall not apply to a special assessment imposed upon real property by a by-law passed pursuant to subsection (1).

(5) This section shall be deemed to have come into force on the first day of January, 1957. 1961, c. 76, s. 12.

Maintenance of local improvements.

506B. (1) Where a project undertaken by Council as a local improvement under this part has been completed, then the Council may by by-law provide that the annual cost of any or all of the following services:—

(*a*) Cleaning, maintaining, or repairing the project;

(*b*) Supplying electric lighting, water, fuel, or steam for the project;

(*c*) Public liability insurance covering the project, the amount of such insurance to be established by Council;

(*d*) Interest on all moneys borrowed or advanced by the Council to pay for the costs incurred under clauses (*a*), (*b*), and (*c*),

shall be specially assessed upon the real property benefited by the project and specially assessed for the payment of all or any part of the cost thereof.

(2) The costs levied against each parcel of land pursuant to subsection (1) shall be a sum which bears to the total costs levied against all of the real property pursuant to subsection (1) the same ratio as the amount specially assessed against each such parcel of land for the cost of the project bears to the total amount specially assessed against all the real property for the cost of the project.

(3) The special assessment imposed pursuant to subsection (1) shall be deemed to be a tax and shall be collected by the city in the same manner and at the same time as the payment of real-property taxes within the city.

(4) Subsections (2) and (3) of section 510 shall not apply to a special assessment imposed upon real property by a by-law passed pursuant to subsection (1).

(5) The by-law may provide that the city pay such portion of the annual cost of any or all of the services mentioned in subsection (1) as the Council may see fit as the city's share of the cost.

(6) A by-law passed pursuant to this section remains in force from year to year until repealed. 1970, c. 54, s. 28.

Provision where pavement exceeds certain width.

507. (1) Where a project undertaken on the initiative of the Council involves the construction of a pavement in front of any property situate in a residential district and the pavement exceeds twenty-seven feet in width, the cost of the excess shall be included in the city's share of the cost. "Residential district," for the purpose of this section, shall mean

of the Court of Revision and of the Judge, and thereupon he shall certify the roll. When so certified, the special assessments therein, subject to any proceedings theretofore taken, shall not be open to question in any Court, and any project undertaken by the Council which is based on such special assessments shall be deemed to have been lawfully undertaken in accordance with the provisions of this Part. 1953, c. 55, s. 514.

Costs to be apportioned.

515. When the portion of the cost of the project to be borne by the property-owners whose real property is specially benefited by the project has been ascertained, it shall be apportioned in yearly payments over the parcels of real property specially benefited, in accordance with, and apportioned to, the amounts specially assessed against each such parcel in the special assessment roll so certified. The portion of the cost of the project to be borne by the property-owners shall not exceed by more than ten per centum the cost of such portion as estimated by the city, and any further excess shall be borne by the city. The yearly payments shall include a sum sufficient to cover the interest. 1953, c. 55, s. 515; 1966, c. 69, s. 18.

Local improvement by-law.

516. The Council shall pass a local improvement by-law levying the taxes so apportioned to defray the property-owners' share of the cost of the project. In a schedule to the by-law there shall be set out the yearly payment apportioned as aforesaid with respect to each parcel. The schedule to the by-law need not be annexed thereto and, if not so annexed, it shall be embodied in the by-law by reference only. The schedule shall be captioned with reference to the by-law, certified by the Assessment Commissioner, and deposited in his office during the currency of the by-law. The schedule so deposited shall be an integral part of the by-law as if expressly embodied therein. 1953, c. 55, s. 516; 1966, c. 69, s. 19.

Amounts to go in tax roll.

517. Thereupon the Collector of Taxes shall, with respect to each parcel so specially assessed, insert in the real-property tax rolls for the years required by the by-law, as a charge imposed with respect to such parcel, the amount of the tax levied thereon by the by-law. 1953, c. 55, s. 517.

By-law to be repassed where held invalid.

518. (1) If a debt has been incurred by the city under this Part, and if after the incurring of such debt a special assessment is adjudged to be invalid, or the by-law providing for borrowing money therefor is set aside or quashed, either wholly or in part, by reason of any error, irregularity, or illegality in making such assessment or in passing such by-law, the Council shall cause a new assessment to be made, and shall pass a new by-law when and so often as may be necessary to provide funds for the payment of the debt so incurred for such work or improvement.

Effect of new by-law.

(2) Every liability or obligation incurred and every debenture issued by the city under the authority of any such defective or illegal by-law shall be as effectual and as binding as if the amending or new by-law

the cost of the project, the shortage shall be paid out of general revenue and shall be amortized over the life of the debentures. 1953, c. 55, s. 523.

Resolution cancelling local improvement or work.

523A. Notwithstanding anything contained in this Act or in any by-law passed in pursuance thereof, in the event of any local improvement or work not being commenced within one year from the date of the sitting of the Court of Revision which was held to hear complaints with respect thereto, the Council may by resolution cancel the said local improvement or work. 1957, c. 85, s. 15.

Special rate levy.

523B. (1) If the Council, by resolution, has declared that

(*a*) it is desirable that a designated work, improvement, or service be undertaken by the Council which it deems will specially benefit the real property in a designated limited and determinable area of the city; and

(*b*) a sum designated by the Council shall be borrowed for such work, improvement, or service; and

(*c*) the Council is of the opinion that it is expedient to proceed under this section,

then the Council may submit to the owner-electors shown on the current list of electors as owners of the real property in such designated area a question in the following form or to the like effect:—

> Are you in favour of the Council having the power to pass by-laws without the assent of the owner-electors in the area of the city hereinafter defined to borrow from time to time by the issue of debentures a sum of money not to exceed [*the sum designated by the Council*] in the aggregate for the following purpose: [*Describe in brief and general terms the proposed work, improvement, or service.*].
>
> The total amount of the indebtedness so incurred shall be borne by the rateable property in the area hereinafter described [*describe in brief and general terms the area of the city designated by Council*], and such amount shall be levied according to the [*insert here either the word "frontage" or the words "assessed value", as designated by Council*] of the rateable property in such designated area.

(2) Upon receiving the returns from such question, the Returning Officer shall add up the votes, and if, as a result, he certifies to the Council that the votes cast in the affirmative amount to three-fifths of all the votes cast, the Council shall have power without the further assent of the owner-electors, as and when Council deems necessary, to pass by-laws to borrow money, by the issue of debentures in an aggregate principal amount not exceeding the sum designated by the Council, for the work, improvement, or service described in such question.

(3) A by-law passed under this section shall provide that the total amount of the indebtedness created by the debentures issued thereunder shall be borne by the rateable property in the limited and determinable area of the city designated by Council in such by-law and specially benefited by the work, improvement, or service to be undertaken, and whether such amount shall be levied according to the frontage of the

rateable property or according to the assessed value thereof. Such levy shall commence not later than one year from the date of the issue of the debentures authorized by the by-law. If the levy is on a frontage basis, it shall not be necessary to state in such by-law the annual rate per front foot.

(4) If a by-law passed under this section provides for a levy to be made according to the frontage of the rateable property, then allowance may be made in any assessment for corner lots, triangular or irregularly shaped parcels of land, and parcels comprising a railway right-of-way, having due regard to the situation, value, and superficial area of such lots or parcels as compared with adjoining lots and parcels of land assessable for such work, improvement, or service, and the Council may charge the amount of any allowance made on any such lot or parcel of land on the other rateable property in such designated area, or may assume the same and provide for payment thereof out of funds raised by general debentures or out of the general revenue of the city.

(5) From any such assessment referred to in subsection (4), there shall be the right to appeal to the Council, and from the Council to a Judge of the Supreme Court. Such appeal shall be limited to the matters referred to in section 511 and shall be brought within one year of the final passing of such by-law, and the appeal to the said Judge shall be brought within fourteen days of the decision of the Council. Service of written notice of appeal on the City Clerk shall be deemed to be the bringing of an appeal. The said Judge may make such order in respect of such assessment and as to costs as he may deem advisable and equitable.

(6) Subject to subsection (5), none of the foregoing sections in this Part shall be applicable to this section, except sections 498 to 505, inclusive, 508, and 518 to 523, inclusive. 1958, c. 72, s. 26; 1966, c. 69, ss. 20–22; 1969, c. 45, s. 25.

PART XXV

QUASHING BY-LAWS AND RESOLUTIONS

Illegal by-law or resolution may be quashed.

524. A Judge, upon the application of a person whose name is on the current list of electors, or of a person interested in a by-law or resolution passed by the Council, may quash the by-law or resolution in whole or in part for illegality. 1953, c. 55 s. 524.

Notice and security.

525. Notice of the application shall be served on the city at least ten days before the day of the hearing, and before the hearing the applicant shall furnish security for the city's costs in such amount and in such manner as the Judge shall think proper. After the determination of the proceedings, the Judge may make such order as to costs as shall be just. 1953, c. 55, s. 525.

or diverting of a street unless, upon application by the owner, a Judge of the Supreme Court otherwise directs. 1953, c. 55, s. 539; 1958, c. 72, s. 31.

Entry on several parcels.

540. When the expropriation of two or more parcels of real property, whether they have the same owner or not, is undertaken as part of a single project, the Judge may make one order for entry upon so many of such parcels as shall be described in the order. 1953, c. 55, s. 540; 1958, c. 72, s. 32.

Injurious Affection

Compensation for injurious affection.

541. Where real property is injuriously affected by the exercise on the part of the city of any of its powers, the city shall, unless it is otherwise provided in this or some other Act, make due compensation to the owner for any damage necessarily resulting therefrom beyond any advantage which the owner may derive from any work in connection with which the real property is so affected. 1953, c. 55, s. 541.

Power to enter other property.

542. It shall be lawful for the city to enter upon any real property in danger of being injuriously affected for the purpose of executing and to execute any work in mitigation of the apprehended injurious affection. 1953, c. 55, s. 542.

Claim to be filed.

543. A claim by an owner for compensation for damage resulting from his real property being injuriously affected shall be filed with the City Clerk, giving particulars of the claim, within one year after the injury was sustained, or after it became known to such person, and if not so filed, the right to compensation shall be forever barred. 1953, c. 55, s. 543.

How damage ascertained.

544. The amount, if any, of the compensation for damage for injurious affection, if not agreed upon, shall be determined, as at the date when the injurious affection first took place, by arbitration, and the provisions of the *Arbitration Act* shall apply, save as is otherwise provided in this Part. 1953, c. 55, s. 544.

General

Three arbitrators.

545. Except as otherwise provided, any arbitration under this Part shall be by three arbitrators, one to be appointed by each party and the third to be appointed by such two arbitrators; provided, however, that the parties may by agreement submit the matter to one arbitrator. 1953, c. 55, s. 545; 1958, c. 72, s. 33.

Vesting order.

546. At any time after the passage of a resolution by Council pursuant to section 532 of this Part and whether the compensation has been determined or not, a Judge may, upon the application of the city and upon such terms as the Judge may think proper, make an order vesting in the city the real property expropriated, and the order shall

APPENDIX 26.

Memorandum from the City of Vancouver Legal Department concerning jurisdiction for Boulevard Trees

CITY OF VANCOUVER

LAW OFFICE CITY HALL

September 22, 1970

R.M. Martin, Esq.,
City Engineer.

Attn: Mr. Townsend

Dear Sir:

RE: Boulevard Trees

Following our meeting yesterday, I have been able to give further consideration to the question of jurisdiction in the control of boulevard trees.

Section 291 of our Charter deals with the question in sub-sections (k) and (l) which with the general heading reads as follows:

"291 The Council may provide

(k) for regulating the planting and care of shade or ornamental trees upon a street, and for prohibiting the injury or destruction of such trees;

(l) for causing any tree upon a street to be trimmed or removed when deemed necessary in the public interest;"

Under Section 151 the powers of the Council may be exercised by resolution in any case where a by-law is not specifically required. Since Section 291 does not require a by-law to exercise the powers therein provided for, they may be given effect to by resolution.

. 2

4509
SDT
P2 1970

L. Davis
L. Dentie
L. Hawthorn
C. Gordon
D. Church
L. Smith

2330 York Ave. Van.
2480 Yew St Van.
2830 Maybird
2855 W 42nd Ave Van
1102-5 (1) 15th.
1176 E Broadway

Section 488 gives "the custody, care and management of the public parks of the City, and of such other areas belonging to or held by the City as the Council may from time to time determine" to the Board of Parks and Public Recreation. In my opinion, the boulevards on our streets are not public parks and would not be considered as such unless the Council in certain instances, i.e. islands or exceptionally wide boulevards, declared them to be, and turned them over to the management of the Board.

It would therefore appear that if the Council determined it was in the public interest to remove any boulevard tree, it could pass a resolution and make arrangements for its removal.

I would think that as the Park Board has equipment to handle the removal of trees, it would be expedient to retain the services of the Board whenever the Council decided to remove a boulevard tree.

I trust the foregoing may be of assistance.

Yours truly,

for Corporation Counsel

ENRE:dmw

Kus f
Dustin
Chesthere
[illegible]

2330 York Ave. Kits.
2480 Yew St Kits
2530 Maple
[illegible]

APPENDIX 27.

Extracts from the British Columbia Municipal Act

6.6

PROVINCE OF BRITISH COLUMBIA

MUNICIPAL ACT

R.S.B.C. 1960, CHAPTER 255; 1961, CHAPTERS 43, 59; 1962, CHAPTERS 36, 41; 1963, CHAPTER 42; 1964, CHAPTER 33; 1965, CHAPTER 28; 1966, CHAPTER 31; 1967, CHAPTER 28; 1968, CHAPTER 33; 1969, CHAPTER 21; 1970, CHAPTER 29; 1971, CHAPTER 38; 1972, CHAPTER 36; 1973, CHAPTER 59

[Consolidated for convenience only, July 1, 1973.]

Printed by K. M. MacDonald, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1973

thereby, shall be paid within six months after the amount of such compensation has been agreed on or appraised and awarded. 1957, c. 42, s. 510; 1958, c. 32, s. 230.

Highways established or altered.

513. (1) The Council may by by-law

(*a*) establish, widen, alter, relocate, or divert a highway or any portion of a highway;

Stop and close.

(*b*) stop up and close to traffic a highway or any portion of a highway, or reopen any highway or any portion of any highway which has been stopped up and closed to traffic;

Quarries, etc.

(*c*) establish quarries, sand and gravel pits either within or without the municipality for the purpose of acquiring material for municipal public works;

Highway naming.

(*d*) assign the name or number of any highway; the by-law shall have no force or effect unless and until a certified copy thereof is filed in the Land Registry Office of the district in which the land is situate;

Alter name.

(*e*) alter the name or number assigned to any highway if the by-law is adopted by an affirmative vote of at least two-thirds of all the members of Council, and upon deposit of a certified copy of the by-law the Registrar of Titles concerned shall note such change of name or number on any subdivision plan in his office whereby such highway was dedicated, and upon any plan filed or deposited in his office whereon such highway is named.

Operation of highways and quarries, etc.

(2) The Council may

(*a*) lay out, construct, maintain, and improve highways or any portion thereof;

(*b*) construct, repair, maintain, improve, and care for sidewalks and boulevards upon highways, and plant, care for, and remove grass, shrubs, trees, and other plants thereon;

(*c*) open and operate quarries, sand and gravel pits acquired by the municipality;

(*d*) clean, oil, and water highways, and provide lighting for highways, and do such other things as are necessary for the safe use and preservation of highways;

(*e*) authorize the Engineer or other official at his discretion to temporarily close a highway or part thereof to traffic, or to control traffic, during the time work is in progress.

Expropriation and free entry.

(3) In addition to any other powers dealing with the acquisition of real property which the Council may exercise, the Council may by by-law enter upon, expropriate, break up, take, or enter into possession of and use any real property in any way necessary or convenient for any of the purposes mentioned in subsections (1) and (2) without the consent of the owners of the real property but subject to the provisions of Division (4) of Part XII.

Land reserved for highway.

(4) (*a*) The Council may by by-law enter into an agreement with any owner of land for reserving any part of such land for highway purposes, including the condition that such land so reserved shall remain unencumbered by buildings or structures, and the agreement shall have the force and effect of a restrictive covenant running with the land and shall be registered in the Land Registry Office by the municipality.

(*b*) A number of agreements entered into may be grouped in the same by-law so long as the terms and conditions for each respective agreement are given. 1957, c. 42, s. 511; 1958, c. 32, s. 231.

Regulation of highways and their protection.

514. (1) The Council may by by-law regulate

(*a*) the construction and maintenance of boulevards by or on behalf of the owners of land fronting thereon;

(*b*) the planting and care of shade or ornamental trees, shrubs, and bushes upon a highway;

(*c*) the planting of trees, shrubs, bushes, or hedges adjacent to any highway;

(*d*) the means of access to and from a highway for any parcel of land abutting thereon, including the location and extent of such access;

(*e*) the construction and maintenance of fences and hedges adjacent to any highway;

(*f*) the lighting, watering, and oiling of any portion of any highway;

(*g*) the assigning of names and numbers to highways, including the placing of signs therefor;

(*h*) the assigning of numbers to buildings and structures, including the placing of such numbers in a conspicuous place.

Responsibilities of owners of property.

(2) The Council may by by-law

(*a*) require the owner or occupier of any real property to remove snow, ice, or rubbish from the sidewalks and foot-paths bordering on the real property owned or occupied by him;

(*b*) require the owner or occupier of any real property to remove snow, ice, or rubbish from the roof or other part of any structure thereon adjacent to or abutting on any portion of any highway;

(*c*) require owners of private highways to maintain them in clean, fit, and safe state and to affix suitable signs indicating that such highways are private thoroughfares;

(*d*) require the owner of any parcel of land abutting on any highway or any portion of any highway to fence that part of the parcel abutting on the highway; and where the municipality requires such fencing, it shall provide to the owner, if needed, the line of the highway at a fee not exceeding five dollars;

Penalties.

(*e*) prohibit and provide penalties for wilful damage to boulevards, trees, shrubs, plants, bushes, and hedges adjacent to any

highway, and to fences and to any thing erected or maintained adjacent to a highway for the purpose of lighting the highway.

Sign-boards, etc.

(3) Subject to the *Highway Act*, the Council may by by-law regulate or prohibit the erection, placing, alteration, maintenance, demolition, and removal of any sign, sign-board, advertisement, advertising device or structure, or any class thereof, and for the purposes of the by-law may

(*a*) classify structures and things;

(*b*) classify any highway or portion thereof, and make different regulations for different zones where established under a zoning by-law and for different classes of highways and portions thereof. 1957, c. 42, s. 512; 1958, c. 32, s. 232; 1964, c. 33, s. 53.

Charges for cleaning and clearing highways, etc.

515. (1) The Council may levy a frontage tax to defray the annual cost of cleaning, clearing snow and ice from, watering, oiling, tarring, sweeping, lighting, supplying light in excess of that supplied at the expense of the municipality at large, cutting grass and weeds, and trimming trees and shrubbery on any portion of any highway, sidewalk, or boulevard, or any one or all of such services; the frontage tax shall be levied on the parcels of land which abut on the portion of the highway, sidewalk, or boulevard, as the case may be.

Corporation may bear portion of the cost.

(2) In a by-law imposing the frontage tax the Council may provide that some portion of the cost of providing any of the services under subsection (1) shall be borne by the municipality.

Reference.

(3) Section 580 applies, mutatis mutandis, to subsection (1), and for that purpose a service shall be deemed to be a work which may be undertaken as a work of local improvement.

Restriction.

(4) The Council shall not undertake to provide a service for which a frontage tax is to be imposed under this section unless a sufficient petition for the service has been received, or no sufficient counter-petition against the service has been received within thirty days of the date the Council has given public notice of intention to undertake such service.

Reference.

(5) The provisions of Division (1) of Part XVI apply, mutatis mutandis, with respect to petitioning for or against the providing of a service under subsection (1). 1957, c. 42, s. 513; 1958, c. 32, s. 233; 1959, c. 56, s. 42.

Division (3).—Wharves and Waterways

516. [*Repealed.* 1968, c. 33, s. 125.]

Water Act to apply.

517. The powers exercisable under this Division are subject to the applicable provisions of the *Water Act*. 1957, c. 42, s. 515.

Subdivision (a).—Wharves

Wharves, docks, warehouses, and slips.

518. (1) The Council may by by-law construct or acquire, by purchase, lease, or otherwise, wharves, docks, warehouses, and slips,

"work" means a work or service which may be undertaken as a local improvement;

"work undertaken" means a work which is undertaken as a local improvement. 1957, c. 42, s. 579; 1958, c. 32, s. 262.

Adoption of Local Improvement System

Local improvement policy.

580. The Council, by by-law adopted with the assent of the owner-electors and with the approval of the Minister, may provide that all works which may be undertaken as local improvements, or any one or more of such works, thereafter, or after a day named in the by-law, shall be undertaken as local improvements and not otherwise. 1957, c. 42, s. 580; 1968, c. 33, s. 136.

Works Which May Be Undertaken as Local Improvements

Works of local improvement, city, town, and district.

581. (1) Any of the works hereinafter mentioned may be undertaken by by-law by the Council of a city, town, or district municipality on the initiative of the Council, or by petition, as a local improvement, that is to say,

(*a*) establishing and opening a street or streets;

(*b*) opening, widening, extending, grading, paving, altering the grade of, diverting, or improving a street or streets, including retaining-walls incidental thereto;

(*c*) constructing a bridge as part of a street;

(*d*) constructing, enlarging, or extending a sewer or water system;

(*e*) constructing a curbing or a sidewalk in, upon, or along a street or streets, including retaining-walls incidental thereto;

(*f*) constructing a boulevard where a part or parts of a street or streets has or have been set apart for the purpose of a boulevard;

(*g*) sodding any part of and planting trees, shrubs, and plants upon and in a boulevard or boulevards, or street or streets, or part or parts thereof;

(*h*) acquiring, establishing, laying out, or improving a park or square having an area of not more than two acres, or a public drive;

(*i*) constructing retaining-walls, dykes, or breakwaters along the sea or lake shore or the banks of rivers;

(*j*) constructing and erecting on any street or streets necessary equipment, wires, and works, including standards and underground conduits, for the purpose of supplying public lighting for that street or those streets;

(*k*) constructing any conduit for wires or pipes under and along any street or streets.

Village municipality.

(2) The Council of a village municipality may by by-law, with the approval of the Inspector of Municipalities, undertake on petition only, as a local improvement, any of the works hereinafter mentioned, that is to say,

(*a*) establishing and opening a street or streets;
(*b*) opening, widening, extending, grading, paving, altering the grade of, diverting, or improving a street or streets;
(*c*) constructing a curbing or a sidewalk in, upon, or along a street or streets;
(*d*) constructing a boulevard where a part or parts of a street or streets has or have been set apart for the purposes of a boulevard;
(*e*) sodding any part of and planting trees, shrubs, and plants upon and in a boulevard or boulevards, or street or streets, or part or parts thereof.

(3) Where, in the exercise of its powers, a corporation acquires, by purchase, expropriation, or otherwise, land or real property for any of the purposes or objects mentioned in this section, the costs thereof shall be included as part of the work.

(4) Nothing in this section extends or applies to a work of ordinary repair or maintenance.

(5) Any by-law adopted under this section shall be termed a "construction by-law." 1957, c. 42, s. 581; 1958, c. 32, s. 263; 1962, c. 41, s. 25; 1968, c. 33, s. 137.

Sidewalk canopies.

581A. (1) In addition to any powers contained in section 581, the Council may undertake, by by-law, the construction and erection of sidewalk canopies as a local improvement.

(2) Notwithstanding the provisions of section 610, any work undertaken pursuant to subsection (1) shall be maintained and kept in repair by the municipality, and any annual expense incurred thereby shall be specially charged against the parcels benefiting in the same proportions as provided for sharing of the cost of the work by the original construction by-law.

(3) The Council may, by by-law, remove any work undertaken pursuant to subsection (1), but the municipality shall assume all future levies pertaining to any work so removed; and, in the event that levies were commuted with respect to any parcel, the commuted value of such future levies shall be paid by the municipality to the owner of the parcel. 1972, c. 36, s. 26.

Connections and driveways.

582. (1) Where the work is the paving of a street or streets, the Council, before commencing the paving, may by by-law, without petition, make all necessary connections from any existing sewer, water, or gas main owned by the municipality to the parcels of land on either or both sides; and the cost of such connection shall be specially charged upon the particular parcel so connected.

(2) The amount to be charged against each parcel in respect of any connection made pursuant to subsection (1) shall be the amount of the connection fee established by by-law pursuant to clause (*a*) of subsec-

(ii) shall direct the Assessor to revise the frontage-tax assessment roll; and

(iii) may, upon the basis of the revised frontage-tax assessment roll, amend the by-law imposing the frontage tax, may refund, by payment in cash or by credit on future municipal taxes, any taxes which under the original assessment were imposed on and which were or are collected from the owners of parcels of land which are not included in the revised frontage-tax assessment roll, and may order any necessary adjustments in the amount of frontage tax which was levied on owners of parcels of land which remain on the revised frontage-tax assessment roll. 1957, c. 42, s. 609; 1958, c. 32, s. 281.

Repair of Work

Duty of corporation to keep work in repair.

610. (1) After a work undertaken has been completed, it shall during its lifetime be kept in repair by and at the expense of the corporation.

(2) Nothing in this Division relieves the corporation from any duty or obligation to which it is subject, either at common law or under the provisions of this Act or otherwise, to keep in repair the highways under its jurisdiction, or impairs or prejudicially affects the rights of any person who is damnified by reason of the failure of the corporation to discharge such duty or obligation.

Limitation.

(3) Nothing in this section makes the corporation liable for any damage for which it otherwise would not have been liable. 1957, c. 42, s. 610.

Procedure for compelling corporation to repair.

611. (1) Where at any time during the lifetime of a work undertaken the corporation fails to keep and maintain it in a good and sufficient state of repair, and, after one month's notice in writing by the owner or occupier of any parcel specially charged requiring the corporation to do so, does not put the work in repair, a Judge of the Supreme Court or a Judge of the County Court, upon the application of any owner or occupier of any land so specially charged, may make an order requiring the corporation to put the work in repair.

(2) The Judge may determine what repairs are necessary, and by his order may direct them to be made in such manner, within such time, and under such supervision as he may deem proper. If upon the proceedings it is shown to the satisfaction of the Judge that the work required to be done to make the repairs which are necessary and reasonable amounts to a reconstruction of the work, the Judge on the application may determine that the same may be done as a work of local improvement, and may fix the amounts to be payable by the corporation and by the owners of land adjacent, as in the original by-law authorizing the work, or otherwise, in his discretion, or in the discretion of the Court of Appeal upon appeal as hereinafter provided.

Removal of trees and shrubs dangerous to public safety.

872. (1) The Council may by by-law provide for the removing, cutting-down, or trimming of any trees, shrubs, hedges, or bushes growing or standing on lands adjacent to a highway and which in the opinion of the Council are dangerous, or where in the opinion of the Council the safety or convenience of the public so requires, or where any such trees, shrubs, hedges, or bushes become injurious to the road-bed, sidewalk, or works, at the expense of the owners or occupiers of lands on which they grow or stand.

(2) Before proceeding to exercise the powers conferred by any by-law adopted under subsection (1), the Council shall give to the owner or occupier of the lands notice requiring him within five days from the date thereof to remove, cut down, or trim the trees, shrubs, hedges, or bushes designated in the notice; and if the owner or occupier does not within the said five days remove, cut down, or trim the said trees, shrubs, hedges, or bushes as required, or make an application to a Judge of the County Court, the municipality, by its workmen and others, may enter and effect such removal, cutting-down, or trimming at the expense of the person defaulting.

(3) If notice is given to the Council of appeal to the Judge of the County Court, the Judge shall hear and determine the matter, and his decision shall be final and without appeal.

(4) The expenses incurred by a municipality under this section shall, if unpaid on the thirty-first day of December in any year, be added to and form part of the taxes payable in respect of the lands designated in the notice. 1957, c. 42, s. 877; 1958, c. 32, s. 342 (*altered*).

Removal of erections and things dangerous to public safety or health.

873. (1) The Council may declare any building, structure, or erection of any kind whatsoever, or any drain, ditch, watercourse, pond, surface water, or any other matter or thing, in or upon any private lands or highway, or in or about any building or structure, a nuisance, and may direct and order that the same shall be removed, pulled down, filled up, or otherwise dealt with by the owner, agent, lessee, or occupier thereof, as the Council may determine and within such time after the service of the order as may be therein named.

(2) Service of an order made under subsection (1) shall be effected by sending a copy of the order by return registered mail to the owner of the lands upon which such building, structure, or erection stands, or such drain, ditch, watercourse, pond, surface water, or other such matter or thing exists, and to all other persons whose names appear on the records of the Land Registry Office as having an interest in the said lands, and to the agent (if known) of the registered owner thereof, and to the lessee and occupier thereof (if any), the same to be sent to the last-known address of each interested person herein referred to.

(3) The Council may further order that, in case of default by the owner, agent, lessee, or occupier to comply with the order within the period named in such order, the municipality, by its workmen and

APPENDIX 28.

Port Coquitlam Municipal Tree Bylaw

THE CORPORATION OF THE CITY OF PORT COQUITLAM

BY-LAW NO. 1293

CONSOLIDATED FOR CONVENIENCE ONLY
Including By-laws 1293, 1384, and 1432

A By-law to regulate or prohibit the cutting of trees from lands within the City of Port Coquitlam.

WHEREAS under Section 868 of the "Municipal Act", being Chapter 255 of the Revised Statutes of British Columbia, 1960 and Amending Acts, the Council of the City of Port Coquitlam may be By-law regulate or prohibit the cutting of trees on lands within the municipality or within any area within the municipality, and require the holding of a permit for such purpose and fix a fee for such permit, and different regulations and prohibitions may be made for different areas; but a by-law pursuant to this clause does not apply to lands designated in a tree farm licence, or to land constituting a forest reserve pursuant to the Forest Act, so long as the land continues to be so designated or reserved.

AND WHEREAS it is deemed expedient that the cutting of trees within the City be regulated;

NOW THEREFORE the Municipal Council of The Corporation of the City of Port Coquitlam, in open meeting assembled, enacts as follows:

1. That in this By-law:

"City" shall mean the geographic area of The Corporation of the City of Port Coquitlam.

"City Administrator" shall mean the City Administrator of The Corporation of the City of Port Coquitlam, or his delegate.

"Council" shall mean the Municipal Council of The Corporation of the City of Port Coquitlam.

"Cutting" shall mean the cutting down or cutting so as to permanently damage any tree, but shall not include beneficial pruning of a tree.

"Permit" shall mean the written authority granted by the City Administrator for the cutting of trees from specified land within the City upon the terms, conditions and plans and specifications applicable to the application for such removal.

*2. The provisions of this By-law shall not apply to any area of the City that is a parcel of real property of Seven Thousand Two Hundred (7,200) square feet or less that has improvements constructed thereon. *(By-law 1384)

*3. (a) No person shall cut, cause, or permit to be cut on any lands within the City to which the provisions of this By-law apply, any tree in excess of Fifteen (15) feet in height, unless and until he is the holder of a permit for such cutting issued by the City Administrator pursuant to this By-law.

(b) Permits for the cutting of trees pursuant to this By-law shall only be issued and granted to the legally assessed owner of the parcel of land on which the cutting is intended to be carried out, and every owner of such land on which such trees are cut shall be responsible of the holding of such permit. Failure by an owner of land on which any tree or trees have been cut, to produce such permit for inspection when requested to do so by an Officer of the City shall constitute a violation of the provisions of this By-law.

(c) All cutting of trees shall be in accordance with the permit issued.*(By-law 1432)

4. (a) All applications for tree cutting permits shall be made in writing on the form prescribed in Schedule "A" hereto, which said Schedule is hereto annexed and made part of this By-law.

(b) A permit may not be transferred or assigned.

5. Applications for permits will be accepted only from the owner or owners of the land in respect of which the permit is applied for. Application shall be made to the City Administrator and shall be accompanied by the requisite information, data, plans, and specifications hereinafter required.

6. An applicant for a permit pursuant to the provisions of this By-law shall provide:

(a) The reason for which the tree or trees is to be cut.

(b) Details of development of the area in which the cutting of trees is proposed and without limiting the generality of the foregoing the said plans shall contain or shall be accompanied by a statement containing the following information:

i. All pertinent topographic features, buildings, structures and tree cover.

ii. The methods proposed to control the erosion of the soil from any slopes of the land or any adjacent land.

iii. The proposed methods of access to the site during the cutting.

iv. The proposed methods of cutting including any safeguards to ensure that no hazard to human or animal life exists.

v. Satisfactory evidence that the person or firm responsible for the cutting is covered by adequate liability insurance.

vi. Such further and other information as the City Administrator may require.

7. Each and every permit issued pursuant to this By-law shall be subject to the following conditions:

(a) All damage to municipal drainage facilities, roads or lanes, or other

municipally owned property resulting from the tree cutting therefrom shall be repaired. All drainage facilities shall be kept free of silt, clay, sand, rubble, debris, gravel and any other matter or thing originating from any tree cutting upon the lands and premises and causing obstruction to such drainage.

(b) Stockpiles of cut trees shall be confined to the locations and quantities prescribed and the same shall be maintained so that they do not adversely affect or damage adjacent properties.

(c) The operation by which the cutting is carried out shall not encroach upon, undermine, or damage any real property.

(d) The permit shall be issued for a specific time which shall be stated on the permit.

(e) No permit shall be issued if the proposed cutting would adversely affect any adjacent property, road or road allowance or watercourse.

8. The City Administrator shall have the right at all times to enter upon and inspect all lands and premises for which a permit has been issued pursuant to the provisions of this By-law, and in the event of notice of a breach in any of the provisions of this By-law or a permit issued pursuant thereto being given to the applicant for such permit by the City Administrator, the said applicant shall forthwith cease and desist from cutting any further trees from the said lands and premises until such breach is remedied.

9. Any person who duly complies with the provisions of this By-law shall be entitled to a permit to cut trees.

10. A permit applies only to the cutting of trees from the lands and premises specifically set out and described in the permit.

11. Where the holder of a permit owns or acquires further lands and premises to which this By-law applies from which he proposes to cut trees then he must notify the City Administrator and make application for a further permit.

Where the land and premises from which the applicant for a permit wishes to cut trees and the cutting is to be carried out along with the cutting of trees from the lands and premises set out in the existing permit, then the City Administrator may amend the existing permit to include the further lands and premises and all provisions of this By-law shall apply mutatis mutandis to such further lands and premises.

12. Every person who violates any of the provisions of this By-law, or who suffers or permits any act or thing to be done in violation of any of the provisions of this By-law, or who neglects to do or refrains from doing anything required to be done by any of the provisions of this By-law is guilty of an offence and upon summary conviction therefor, shall be liable to a fine and penalty not exceeding Five Hundred ($500.00) Dollars, or in default of payment thereof, or in the alternative to imprisonment for a period of time not

exceeding Six (6) months.

13. This By-law may be cited for all purposes as the "City of Port Coquitlam Tree Cutting Regulation and Permit By-law, 1973 No. 1293".

Read a first time by the Municipal Council this Seventeenth day of December, 1973.

Read a second time by the Municipal Council this Seventeenth day of December, 1973.

Read a third time by the Municipal Council this Seventeenth day of December, 1973.

Reconsidered, finally passed and adopted by the Municipal Council of The Corporation of the City of Port Coquitlam this Twentieth day of December, 1973.

Mayor

City Clerk

THE CORPORATION OF THE CITY OF PORT COQUITLAM

"CITY OF PORT COQUITLAM TREE CUTTING REGULATIONS AND PERMIT BY-LAW, 1973, NO. 1293"

SCHEDULE "A"

PERMIT TO CUT TREES
(as required by By-law No. 1293).

A. APPLICATION FOR PERMIT (to be completed by applicant)

1. Legal Description

2. This application is for (a) the renewal of a permit
or (b) a new permit
or (c) an addition to adjacent property for which a permit has been issued.

3. The reason for the cutting of trees is

4. Plans showing details of the lands on which cutting is to take place is attached.

5. I hereby apply, as owner of the above property, for a permit to cut from this property a tree or trees.

owner.

date.

B. APPROVAL OF PERMIT. (to be completed by The Corporation of the City of Port Coquitlam)

Permission is granted to the owner of the above property to cut from his property a tree or trees in accordance with By-law No. 1293, the plans approved, and the following conditions:

This permit expires on _____, 19__.

City Administrator,
The Corporation of the
City of Port Coquitlam.

APPENDIX 29

Laws of New Jersey

Relating to Shade Trees

2.73

Laws of New Jersey

relating to

Shade Trees

1933

DEPARTMENT OF
CONSERVATION AND DEVELOPMENT
STATE OF NEW JERSEY

DIVISION OF FORESTS AND PARKS
DEPARTMENT OF CONSERVATION AND DEVELOPMENT

Room 413, State House Annex
Trenton, New Jersey

C. P. WILBER . . . . . *State Forester*

SHADE TREE COMMISSIONS

Municipal Shade Tree Commissions

An Act providing for the regulating, planting, care, and control of shade trees and shrubbery upon the public highways and in municipal parks, and for the care, control and improvement of such parks; authorizing the continuance of existing shade tree commissions, and the appointment of shade tree commissions, and prescribing their powers and duties (Revision of 1915). Approved April 14, 1915 (Ch. 325).

Sec. 1. In every city, town, township, borough, or other municipality of this State, except counties, it shall be lawful for the body having charge of the finances of such municipality, and in the case of a municipality governed by commissioners, then for the commissioners of such municipality to ordain that the regulation, planting, care, and control of shade and ornamental trees and shrubbery upon or in the highways, parks, or parkways of such municipality, except county parks and parkways, shall be exercised by, and be under the authority of a commission consisting of three residents of such municipality, which commission shall be known as the "Shade Tree Commission of .....," the members of which commission shall be appointed by the chief executive of such municipality within sixty days after such ordinance shall have become a law, and shall serve without compensation, except as provided in section four of this act. (P. L. 1915, p. 588.)

Shade tree commission

Appointment

Sec. 2. If, in any such municipality, there is in existence a park commission or a parkway commission, except a county park or parkway commission as distinguished from a shade tree commission, such existing park or parkway commission shall, upon such ordinance becoming a law, exercise the powers hereby granted to, and discharge the duties imposed upon, a shade tree commission, but shall receive no additional compensation by reason thereof. (P. L. 1915, p. 589.)

If park commission, duties performed by it.

Sec. 3. In all municipalities not coming within the provisions of section two of this act, the terms of office of the commissioners first appointed in any municipality shall begin upon the day of their appointment, and continue for the

Terms of commissioners

respective periods of three, four and five years, from the first day of January next succeeding such appointment, the terms of the said appointees to be designated in their respective appointments. All other appointments except to fill vacancies shall be made to take effect upon the first day of January of each year, for a full term of five years.

Vacancies

Any vacancy occurring in the membership of any commission, by reason of the death, resignation, or removal of any commissioner, shall be filed, for the unexpired term, by the authority making the original appointment. (P. L. 1915, p. 589.)

Sec. 4. In all municipalities, other than those referred to in section two hereof, a shade tree commission shall organize within thirty days after the appointment of its total membership, for the remainder of the then current year, and thereafter annually, by the election of one of its members as president, and the appointment of a secretary, who need not be a member of the commission. The compensation of the secretary and of all other employees shall be fixed by the commission. (P. L. 1915, p. 589.)

Organization

Compensation of employees

Sec. 5. (*As amended February* 16, 1918, *Ch.* 58.) A shade tree commission under this act shall have power: to exercise full, sole and exclusive control over the regulation, planting and care of shade and ornamental trees and shrubbery now situate, or which may hereafter be planted in any public highway, park or parkway, except county parks or parkways, of the municipality for which it is created, including the planting, trimming, spraying, care and protection of the same for the public good; to regulate and control the use of the ground surrounding the same, so far as may be necessary for their proper growth, care and protection; to move, or require the removal of any tree, or part thereof, dangerous to public safety, at the expense of the owner of such tree; and to remove any tree or part of a tree at the request and expense of the owner of such tree; to care for and control such parks and parkways; to encourage arboriculture; to make, alter, amend and repeal, in the manner prescribed for the passage, alteration, amendment and repeal of ordinances by the legislative body of said municipality, any and all ordinances necessary or proper for carrying out the provisions of this act; and to contract with the owner of any real estate in said city to supply to him material and labor for the purpose of planting, cultivating or removing trees, grass, flowers, or shrubbery, and to charge the actual cost thereof to such owner; or if, after such material or labor is supplied, payment therefor is not made on demand, to certify the actual cost thereof to the collector of taxes, whereupon such sum so certified shall be collected by said collector as other taxes on real property are collected in such municipality. (P. L. 1918, p. 168.)

Power of Commission

Sec. 6. (*As amended February* 16, 1918, *Ch.* 58.) The said commission may prescribe a fine for the violation of each of their ordinances in an amount not exceeding one hundred dollars for each violation, and the courts which now or hereafter shall have jurisdiction over actions for the violation of ordinances of the municipality in which said commission has been or shall be appointed shall have jurisdiction in actions for the violation of such ordinances as the said commission shall enact; and said ordinances shall be enforced by like proceedings and processes, and the practice for the enforcement of said ordinances shall be the same as that provided by law for the enforcement of the ordinances of the municipality in which such commission exists. The officers authorized by law to serve and execute processes in the courts, as aforesaid, shall be the officers to serve and execute any process issued out of any court under this act. A copy of any ordinance or ordinances of said commission, certified to under the hand of the clerk, secretary, or president of the said commission, shall be taken in any court of this State as full and legal proof of the existence of such ordinance or ordinances, and that all requirements of law in relation to the ordaining, publishing and making of the same, so as to make it legal and binding, have been complied with, unless the contrary be shown. (P. L. 1918, p. 169.)

Penalty

Jurisdiction of court

Certified copies of ordinances in evidence

Sec. 7. All moneys collected in any municipality, either as fines or penalties, for any violation of a rule or regulation of a shade tree commission, or as a charge against real property, under any provision of this act, shall be forthwith paid over to the municipal officer empowered to be custodian of the funds of such municipality; shall be placed to the credit of the shade tree commission of such municipality, and shall be subject to be drawn upon by such commission for the conduct of its work. (P. L. 1915, p. 590.)

Disposition of penalties

Sec. 8. Except as hereinafter provided, the initial cost of all trees planted by the commission, the cost of planting the same, the cost of the posts and boxes or guards used for the protection of the same, and the costs of the removal of any tree dangerous to public safety shall be a charge upon the real property in front of which such tree or

Cost of trees, etc., a charge on property

Cost a lien

trees shall be planted or removed as an improvement thereof. Such cost, unless paid directly to the shade tree commission, shall be certified by the commission to the collector of taxes of the municipality, shall thereupon become and be a lien upon said property, shall be included in the next tax bill rendered to the owner or owners thereof, and shall be collected in the same manner as other taxes against said property.

Exceptions

The provisions of this section shall not apply to: (a) A planting to replace a tree or trees theretofore planted by the commission. (b) A planting in connection with Arbor Day exercises or other educational demonstration. (P. L. 1915, p. 591.)

Sec. 9. (*As amended February* 16, 1918, *Ch.* 58.) In every case in which, under the provisions of this act, the property of an abutting owner will be chargeable with the cost of the planting of any shade tree or trees, the shade tree commission shall give notice of the meeting at which it is proposed to consider said planting by publishing said notice at least once, and not less than twenty days before said meeting, in a newspaper circulating in the municipality, or by personal service of a copy of said notice upon said abutting owner at least ten days before said meeting. Said notice shall specify the street, streets, or portions thereof, on which such planting is proposed to be done, and require all persons who may object thereto to present their objections in writing at the office of the commission at or before said meeting. Before final action shall be taken all objections so filed shall be considered. The provisions of this section shall not apply to the planting of a tree at the request of an abutting owner who shall agree in advance to pay the cost thereof. The commission shall give reasonable notice of its intention to remove or cause the removal of a tree, or part of a tree, dangerous to public safety, unless public safety requires immediate removal, whereupon, no notice shall be necessary. (P. L. 1918, p. 170.)

Notice of planting to abutting owners

Hearing

Notice of removal of tree

Sec. 10. Each year, at least thirty days before the date fixed by law for the certification by the clerk or other officer of the taxing district to the assessor thereof of the amount of tax to be raised for the purpose of said district, every shade tree commission shall certify to the body having control of the finances of its municipality the estimated sum, over and above any balance remaining in its hands or standing to its credit, necessary for the proper conduct of its work during the ensuing fiscal year. If the amount certified by the commission does not exceed one-tenth of one mill on the dollar of assessed valuation of all taxable property of the municipality, the said body shall include and cause the same to be certified to the assessor as part of the amount to be raised by taxes for the purpose of said municipality. If the said estimated sum exceeds one-tenth of one mill on the dollar of assessed valuation, the said body shall include and cause to be so certified such part of said estimated sum not less than one-tenth of one mill on the dollar of said assessed valuation as it may deem proper. All sums so certified by any governing body shall be, in regular course, appropriated for, placed to the credit of, and be subject to be drawn upon by the said shade tree commission for the purpose of its work. (P. L. 1915, p. 592.)

Annual estimate to be furnished

Money to be provided

Sum placed to credit of commission

Sec. 11. No statute giving any individual or State or municipal board, body or official power or authority to lay any sidewalk along, or to open, construct, curb or pave any street, or do any like act, shall be held or construed to permit or authorize any interference with or injury to a highway shade tree without the consent of the shade tree commission within whose jurisdiction such tree shall be located; *provided*, that in all cases such commission shall reasonably co-operate with such individual, board, body or official for the general public good; *and provided, further*, that nothing herein contained shall be held to take away or diminish any of the powers or authority of any county park commission over the trees or shrubbery in any county park or parkway within its jurisdiction, or to give any other commission or board any power or authority with respect to such trees or shrubbery. (P. L. 1915, p. 592.)

Street improvements not to injure trees

Shade tree commission must co-operate

Powers of county park commission not affected

Sec. 12. (*As amended February* 16, 1918, *Ch.* 58.) Nothing herein contained shall operate to terminate the existence of any existing shade tree commission in any municipality, or the term of office of any member thereof, and every such existing commission shall, immediately upon this act taking effect, be deemed to exist by virtue of this act; *provided*, that upon the expiration of the terms of such commissioners, their successors shall be appointed so as to con-

Existing commissions continued

Proviso

stitute a commission of three members under this act. Such existing commission shall exercise all of the duties and have all of the powers of a commission appointed and organized hereunder, shall be subject to all of the provisions hereof, and all of the ordinances of such existing shade tree commission, not inconsistent herewith, shall be in full force and effect as if made under the provisions of this act. All funds collected or assessed, or in progress of collection, by any existing municipal shade tree commission, for shade tree purposes, and all contracts made by or obligations due to any such existing shade tree commission, are hereby continued and transferred to a commission of the same municipality when appointed and organized under this act, and shall not lapse or be prejudiced hereby. All employees of any existing shade tree commission shall be continued and transferred to a commission of the same municipality when appointed and organized under the provisions of this act, and the status and tenure of employment of such employees shall not lapse or be prejudiced or affected by reason of such substitution of a commission appointed and organized hereunder in the place and stead of a commission formerly existing. (P. L. 1918, p. 170.)

Duties and powers

Funds, contracts, etc., transferred and continued

Employees continued

Section 13. All provisions of this act, with respect to a shade tree commission, shall be deemed and taken as applicable to a park or parkway commission, exercising the powers and discharging the duties of a shade tree commission under the provisions of section two of this act. (P. L. 1915, p. 594.)

Act applicable to park commissions

Sec. 14. Nothing in this act contained shall be construed to make any shade tree commission responsible for the death or injury of any person, or for any injury to any property or highway tree or shrub. (P. L. 1915, p. 594.)

No liability for death or injury

Sec. 15. If any clause, sentence, paragraph, part, or provision of this act shall, for any reason, be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder of this act, but shall be confined in its operation to the clause, sentence, paragraph, part, or provision directly involved in the controversy in which such judgment shall have been rendered. (P. L. 1915, p. 594.)

As to constitutionality of act

County Shade Tree Commissions

An Act providing for the regulating, planting, care and control of trees and shrubbery upon the public highways in the counties of the State. Approved February 28, 1924 (Ch. 15).

Sec. 1. (*As amended April* 24, 1929, *Ch.* 195.) In any county of this State it shall be lawful for the board of chosen freeholders by resolution to establish a board of shade tree commissioners, to consist of not more than five residents of such county, which commission shall be appointed by the board of chosen freeholders, and shall be known as the "Shade Tree Commission of ..... County"; *provided, however*, that the board of chosen freeholders, or such a committee or committees thereof as such board may designate, may exercise all of the functions herein conferred on such "Shade Tree Commission." Of the commissioners first appointed, in the event that the commission is to consist of five members, one shall serve for the period of one year, one for the period of two years, one for the period of three years, one for the period of four years, and one for the period of five years, and thereafter one such commissioner shall be appointed annually for the term of five years. In the event that it is desired that the commission shall consist of less than five members, the appointments shall be so arranged as to have the term of one commissioner expire each year. In the event of a vacancy, the board of chosen freeholders shall appoint a new commissioner for the unexpired term.

Shade tree commission

Proviso

Vacancy

Sec. 2. Such shade tree commission shall organize within thirty days after the appointment of its total membership for the remainder of the then current calendar year, and thereafter annually, by the election of one of its members as president and the appointment of a secretary, who need not be a member of the commission.

Organization

Sec. 3. Said shade tree commissioners shall serve without compensation, but, by and with the consent of the board of chosen freeholders, shall be entitled to be reimbursed for their necessary expenses, and, by and with like consent, may employ such expert, clerical or other assistance as they deem necessary and proper, and may fix their compensation, which shall be paid as is the compensation of other employees of the county, and likewise may buy, sell or exchange such trees, plants, equipment or supplies as they deem necessary

Employees

Materials and supplies

and proper for the work of the commission, and make payment therefor in the manner in which such expenditures are ordinarily made by the county.

Sec. 4. Except as hereinafter provided, such shade tree commission shall have power to exercise full, sole and exclusive control over the regulation, planting and care of shade and ornamental trees and shrubbery now situate or which may hereafter be planted in any public highway, park or parkway of the county, including the planting, trimming, spraying, care and protection of the same for the public good; the regulation and control of the use of the ground surrounding the same, so far as may be necessary for their proper growth, care and protection; the moving or requiring the removal of any tree or part thereof dangerous to public safety; the care and control of such parks and parkways; the encouragement of arboriculture; and the contracting with the owner of any real estate along the highways in the county to supply to him material and labor for the purpose of planting, cultivating or removing trees or parts of trees, or shrubbery, and to charge the actual cost thereof to such owner.

Powers and duties

Contracts and agreements

Sec. 5. Such county shade tree commission, by and with the consent of the board of chosen freeholders of the county, may make such rules and regulations as may in their opinion be necessary for the protection and care of the trees, shrubbery or ornamental material planted or growing naturally within the highways and parks under its jurisdiction as provided in this act; and by and with like consent may prescribe a suitable fine for the violation of each such rule or regulation, in an amount not exceeding one hundred dollars for each violation, and any court within the county, having jurisdiction over actions for the violation of municipal ordinances in any municipality within the county, shall have jurisdiction in actions for the violation of such rules and regulations as said commission may prescribe, and said rules and regulations shall be enforced by like proceedings and processes, and the practice for the enforcement of said rules and regulations shall be the same as that provided by law for the enforcement of the ordinances of the municipality in which the action is instituted. The officers authorized by law to serve and execute processes in the courts, as aforesaid, shall be the officers to serve and execute any process issued out of any court under this act. A copy of any rule or regulation of such shade tree commission, certified to under

Rules and regulations

Penalties for violations

the hand of the secretary or president of the said commission, shall be taken in any court of this State as full and legal proof of the existence of such rule or regulation, and that all requirements of law in relation to the making and approval of the same, so as to make it legal and binding, have been complied with, unless the contrary be shown.

Sec. 6. All moneys collected by such county shade tree commission, either as fines or penalties for violation of a rule or regulation of such commission, shall be forthwith paid over to the treasury of the county and shall become part of the funds of the county to be used by the board of chosen freeholders of such county as permitted by law. All moneys collected by such commission for services rendered, or material furnished as provided in this act, under contract or by agreement, shall be forthwith paid over to the treasury of the county, and by the county officer empowered to be the custodian of such funds, shall be placed to the credit of the shade tree commission of the county and shall be subject to be drawn upon by such commission for the conduct of its work.

Disposition of penalties and revenue

Sec. 7. The powers and duties herein provided for a county shade tree commission shall not be valid or operative; (1) within the limits of any municipality in which there now is or in which there may hereafter be established a municipal shade tree commission as provided for by "An act providing for the regulating, planting, care and control of shade trees and shrubbery upon the public highways and in municipal parks, and for the care, control and improvement of such parks; authorizing the continuance of existing shade tree commissions, and the appointment of shade tree commissions, and prescribing their powers and duties (Revision of 1915)," approved April fourteenth, one thousand nine hundred and fifteen, with any supplements and amendments thereto; or (2) within the limits of any county park, for the establishment or maintenance of which there now is or hereafter shall be appointed a special park commission by the chosen board of freeholders of the county; or (3) within the dedicated limits of any State highway with the establishment or maintenance of which the State Highway Commissioners of New Jersey, or their successors, are charged by law; or (4) within the limits of any State forest park reservation or State park now or hereafter established in accordance with law under the jurisdiction of the Board of Conservation and Development of New Jersey or its successors, or of any special park commission of this State, except with the consent of the respective agencies above named; and that such county

Limitations of jurisdiction

shade tree commission may co-operate with or contract with any of the above-named agencies for the establishment or maintenance of ornamental and shade trees or shrubs along any highway or within any forest park reservation or park within the county. (P. L. 1924, Chapt. 15.)

Co-operative activities

TREES ON STATE HIGHWAYS

An Act to establish a State Highway System, and to provide for the improvement, betterment, reconstruction, resurfacing, maintenance, repair and regulation of the use thereof (Revision of 1927). Approved March 30, 1927 (Ch. 319).

Sec. 118. Improvement: The original work on a road or right-of-way which converts the same into a road which shall, with reasonable repairs thereto, at all seasons of the year, be firm, smooth and convenient for travel. Improveprovement shall consist of location, grading, surface, and subsurface drainage provisions, including curbs, gutters, and catch basins, foundations, shoulders, and slopes, wearing surface, bridges, culverts, retaining walls, intersections, private entrances, guard rails, shade trees, illumination, guideposts and signs, ornamentation and monumenting. All of these component factors need not be included in an original improvement. (P. L. 1927, pp. 730-731.)

May plant shade trees

STATE HIGHWAY DEPARTMENT AUTHORIZED TO PLANT

A Supplement to an Act entitled "An act to amend and supplement an act entitled 'An act to establish a State Highway Department and to define its powers and duties; and vesting therein all the powers and duties now developed by law upon the Commission of Public Roads, and the existing State Highway Commission and Highway Commission,' approved March thirteenth, one thousand nine hundred and seventeen" (Ch. 21).

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Sec. 1. It shall be lawful for the State Highway Commission to set apart in any calendar year from the amount subject to expenditure in such year for State highway construction, a sum not exceeding one per centum of the amount expended by said commission in the preceding calendar year

for construction of State highways, and to expend one per centum or part thereof in the calendar year when the same shall have been set apart, and such additional amounts as may be voluntarily contributed by private parties, in the planting and care of trees and shrubbery in and along any State highway; to remove unsightly objects therefrom, and otherwise to effect highway beautification. The money so set apart shall be expended under the supervision of a competent landscape architect, to be employed by said State Highway Commismission for that purpose. (P. L. 1931, p. 50.)

Expenditures for trees and shrubbery

Beautification

Supervision

Roadside Signs and Advertising

An Act concerning business or commercial advertising on private property and upon public roads, providing for the punishment of violations of the act and the abatement of nuisances resulting therefrom. Approved March 26, 1917 (Ch. 131).

Sec. 1. (*As amended April* 21, 1931, *Ch.* 170.) Whoever shall paint or place upon, or in any manner affix to, any fence, structure, pole, rock, tree or other object which is the property of another, whether within or without the limits of any public highway, or maintain thereon any words, device, trademark, advertisement or notice, which is not required by law to be posted thereon, without first obtaining the consent in writing of the owner or tenent of such property, or of the board or body having charge or control of such highway if the words, device, trademark, advertisement or notice is placed on a highway, shall upon complaint of any such owner or tenant, or of any police officer or other person, be liable to a penalty of twenty-five dollars ($25.00) upon conviction in any police court or by any recorder of the city, town, township, borough or other municipality wherein such violation occurred. In case such consent is obtained, that fact shall be stated on the advertisement or notice.

Advertising on property without consent

Penalty

Sec. 2. It shall be the duty of every subordinate officer or member of the Department of State Police to report to the superintendent, or to any deputy or assistant superintendent of the State Police, any violation of the first section of this act so far as it relates to public highways within the territory patroled by such subordinate officer or member of said Department of State

Violations reported by State Police

Police outside of any incorporated city, town, borough or other municipality having an organized police force; thereupon, it shall be the duty of the superintendent of the Department of State Police, or of any person designated by him, to notify the person violating said section as aforesaid to abate the nuisance forthwith, and if such notice is not promptly complied with, suit shall be commenced for the penalty herein prescribed in the name and for the use of the State.

Notice to abate nuisance

Sec. 3. It shall be the duty of the subordinate officers of the police force of every city, town, borough or other municipality in this State, having an organized police force, to report to the Chief of Police of such city, town, borough or other municipality in which he is employed every violation of the first section of this act so far as it relates to public highways within such city, town, borough or other municipality; thereupon, it shall be the duty of such chief of police, or of any person designated by him, to notify the person violating said section as aforesaid to abate the nuisance forthwith, and if such notice is not promptly complied with, suit shall be commenced for the penalty in the name and for the use of the city, town, borough or other municipality.

Violations reported by municipal police

Violators notified to abate nuisance

Sec. 4. Any word, device, trademark, advertisement or notice which shall be painted, placed, affixed or maintained within the limits of any highway of this State in violation of the provisions of this act shall be considered and held to be a public nuisance.

What constitute nuisances

Sec. 5. This act shall not apply to or include any cautionary signals or signs, or directional signs or notices erected on or along any highway by the board or body having control thereof, or by its consent.

Exceptions

ARBOR DAY

An Act relating to Arbor Day.
Approved April 13, 1908 (Ch. 187).
(1 *Comp. Stat., p.* 109.)

Sec. 1. (*As amended March* 21, 1912, *Ch.* 120.) For the purpose of encouraging the planting of shade and forest trees, the second Friday of April, in each year, is hereby designated as a day for the general observance of such purpose, and to be known as Arbor Day. (P. L. 1912, p. 169.)

Date

Sec. 2. On said day appropriate exercises shall be introduced in all the schools of the State, and it shall be the duty of the several county and city superintendents to prepare a program of exercises for that day in all the schools under their respective jurisdiction. (P. L. 1908, p. 378.)

School exercises

TREE INJURY OR DESTRUCTION

Civil Action for Abuse

An act to prevent the unlawful waste and destruction of timber in this State. Passed February 20, 1820. Revision of 1887, p. 1187. (4 *Comp. Stat., p.* 5396.)

Sec. 1. That if any person or persons whatsoever shall, at any time hereafter, cut, fell, work up, carry away, box, bore, or destroy any tree, sapling or pole, standing or lying on any land within this State, to which such person or persons hath not or have not any right and title, without leave first had and obtained of the owner or owners of the said land for that purpose, every such person or persons so offending shall forfeit and pay for each tree, sapling, or pole so cut, felled, worked up, carried away, boxed, bored, or destroyed as aforesaid, the sum of eight dollars; one-half to the owner or owners of the land, and the other half to the person or persons who shall sue for and prosecute the same to effect, at any time within eighteen months from the cutting, felling, working up, carrying away, boxing, boring, or destroying of any such tree, sapling or pole; and that whenever any person or persons, within this State, shall be sued or prosecuted before any justice of the peace within the same, it shall and may be lawful for such justice of the peace to proceed, whenever the penalty demanded shall not exceed one hundred dollars, notwithstanding any claim the defendant or defendants may offer to make to the land whereon and from which the said tree, sapling, or pole may be cut, felled, worked up, boxed, bored, destroyed, or carried away, and to issue execution for the same, with costs of suit, unless the defendant or defendants shall immediately enter into bond to the plaintiff or plaintiffs, with one or more sufficient sureties or surety, being freeholders, in double the sum so demanded, with a sufficiency for costs of suit, conditions for his or their appearance at the next court where the same may be cognizable, in an action of trespass, and to pay damages found against him, or them, with costs of suit, any law, usage, or custom to the contrary notwithstanding.

Penalty in civil suit for cutting or felling trees

Trees, Shrubs and Wildflowers

An Act for the conservation of certain wild flowers, plants and trees. (Approved March 26, 1926, Ch. 187.)

Sec. 1. Any person found guilty of removing, cutting, breaking, injuring or destroying any tree, shrub, flower, vine or moss, or attempting to do so, without the personal direction or written consent of the owner of the property, shall be punished by a fine of not less than ten dollars or more than one hundred dollars, in an action in debt.

Sec. 2. Any person found guilty of taking any tree, holly, laurel, rhododendron, winterberry or ground pine, without personal supervision or written consent of the owner of the property, shall be punished by a fine of not less than ten dollars or more than one hundred dollars, in an action of debt. Nothing in this act shall apply to public utility companies or their agents engaged in the performance of public utility company duties.

Sec. 3. All actions under this act shall be commenced within three months from the time such offense was committed and not afterwards.

Criminal Action for Abuse

An Act for the punishment of crimes (Revision of 1898). Approved June 14, 1898 (Ch. 235). (2 *Comp. Stat., p.* 1788.)

"Sec. 138. Any person who shall unlawfully cut, fell, work up, carry away, box, bore, bark or destroy any tree, sapling, log or pole, standing or lying on any land, to which such person hath not legal right or title, without leave first had or obtained of the owner or owners of the said land for that purpose, shall be guilty of a misdemeanor; *provided*, this section shall not apply to any person who shall do the same by mistake or accident, or without any intention to injure or defraud the owner thereof." (P. L. 1898, p. 832.)

Unlawful to destroy trees

Hitching Horses to Shade Trees Prohibited

From An Act providing for the regulation of vehicles, animals and pedestrians on all public roads, etc. Approved April 6, 1915 (Ch. 156).

Sec. 11. (18) No horse shall be hitched or fastened to any pole carrying wires of any description, nor to any public lamp post or pole, nor to any shade tree or its protecting box or casing, nor to any water hydrant in any street. (P. L. 1915, p. 295.)

NOTE This law applies only in places where the houses are on an average of less than one hundred feet apart. *Penalty:* For a first offense a fine not exceeding $25, or not over 10 days in jail; for each additional offense a fine not exceeding $50, or not over 20 days in jail. (P. L. 1915, p. 304.)

APPENDIX 30.

Example of Standard Municipal Tree Ordinance from the International Society of Arboriculture

A Standard Municipal Tree Ordinance

INTERNATIONAL SOCIETY
OF ARBORICULTURE

A STANDARD MUNICIPAL TREE ORDINANCE

with

Standard Arboricultural

Specifications

and Standards of Practice

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P.O. Box 71, Urbana, Illinois 61801

Second Edition

January, 1972
Reprinted March, 1978

CONTENTS

The Second Edition of the Standard Municipal Tree Ordinance with Arboricultural Specifications and Standards of Practice is presented in four parts:

ACKNOWLEDGEMENT OF THE STANDARD MUNICIPAL TREE ORDINANCE COMMITTEES

A Standard City Ordinance, Regulating the Removal, Planting and Maintenance of Shade Trees in Public Areas, and Standard Arboricultural Specifications and Standards of Practice was first published by the National Shade Tree Conference in September, 1954. The Committee responsible for the preparation of this first edition consisted of Karl Dressel, Chairman, Phillip E. Alden, Edward A. Connell, Arnold Peterson, Fred W. Roewekamp, Edward H. Scanlon, and Carl J. Schiff.

The second edition of the Standard Municipal Tree Ordinance was prepared by the Publications Committee of the International Shade Tree Conference, Inc.: Dr. L. C. Chadwick, Chairman, R.R. Hirt, Erik Jorgensen, George S. Langford, Dan Neely, Philip L. Rusden, and Noel Wysong.

The Committee is particularly indebted to Dr. E. B. Himelick, Executive Director, International Society of Arboriculture for his many helpful suggestions in the preparation of this manuscript.

Part I

Foreword

The International Society of Arboriculture recommends that this Standard Tree Ordinance and Standards of Practice be considered by a municipality when establishing or revising their shade and ornamental tree ordinance. These suggestions provide a source of information that can be used as a guide in developing an ordinance that will conform to local conditions. Local conditions vary so much that it is impossible to develop a Standard Municipal Tree Ordinance, Arboricultural Specifications and Standards of Practice that will apply to all municipalities. Changes will have to be made to conform to legal wording and to satisfy existing laws and ordinances.

Different titles are used to designate the municipal official charged with the responsiblity of the public trees. Commonly used titles are Arborist, Forester, and Tree Warden. Local custom will indicate the best title for a local area. This official should be granted the authority by the Shade Tree Commission to modify the Specifications and Standards of Practice to meet local conditions.

Control of the Public Shade and Ornamental Trees

The International Society of Arboriculture strongly suggests that the municipality should assume complete control over all public tree planting, maintenance, and removal. These functions should be performed with municipal crews and personnel, or by contracts with qualified, licensed, and insured private tree companies. Sufficient monies for these services should be provided from general municipal funds or by municipal-wide assessments. In some municipalities where the municipality cannot furnish sufficient monies to finance proper public tree care, there is a system of assessments of the actual cost of the work to the abutting property owner. Other municipalities operate by granting special permits to homeowners to plant or perform maintenance practices.

Permits to Public Utilities

All work on public trees by the utility companies may be under the control of the municipal official in charge of the public trees through written specifications, permit, and inspection.

Permits to Private Arborists

All work on public trees by private arborists may be under the control of the municipal official in charge of public trees through written specifications, permit, and inspection

Liability Insurance and Safety Practices

All applicants for permits to work on public trees must comply with state and local liability insurance requirements, workman's compensation, and safety codes.

The municipality should provide sufficient insurance or its equivalent to cover ›ility and property damage that might be caused by municipal employees in their rk. The municipality should carry accident insurance on all its employees if not quately covered by the state compensation laws.

Species, Cultivars, and Varieties of Trees

The International Society of Arboriculture strongly recommends the use of *irable* tree species, cultivars, or varieties for planting in public areas. The munici- arborist should compile a list of desirable species suitable for each section of the nicipality and only approved species should be planted. The International Society Arboriculture booklet, *Shade Tree Evaluation*, can be used as a guide in selecting irable trees. The selection of suitable trees for a municipality will require a careful dy of existing environmental factors. The use of many species, cultivars, or ieties is recommended. One or two species should not dominate the municipality.

Location

In congested areas, each tree should have at least twelve (12) square feet of open al space. In new subdivisions, ample area should be provided for public trees. The velopment of new subdivisions should be a joint project of the Municipal Planning mmission, Engineer, Lighting Engineer, Arborist, and the subdivision owners.

Tree Maintenance Practices

All tree planting, maintenance, and removal practices should follow approved fessional arboricultural standards.

STANDARD MUNICIPAL ORDINANCE

REGULATING THE PLANTING, MAINTENANCE, AND REMOVAL OF SHADE AND ORNAMENTAL TREES ON PUBLIC AREAS IN THE

CITY OF _____,

COUNTY OF _____,

STATE OF _____.

ORDINANCE NO. _____

AN ORDINANCE REGULATING THE PLANTING, MAINTENANCE, AND REMOVAL OF TREES IN THE PUBLIC STREETS, PARKWAYS, AND OTHER MUNICIPAL-OWNED PROPERTY: ESTABLISHING A SHADE TREE COMMISSION AND ESTABLISHING THE OFFICE OF A MUNICIPAL ARBORIST AS THE AGENCIES PRESCRIBING REGULATIONS RELATING TO THE PLANTING, MAINTENANCE, AND REMOVAL OF TREES IN PUBLIC PLACES: PROVIDING FOR THE ISSUING OF PERMITS FOR THE PLANTING, MAINTENANCE, AND REMOVAL OF TREES IN PUBLIC PLACES: PROVIDING FOR THE PRUNING AND REMOVAL OF TREES ON PRIVATE PROPERTY WHICH ENDANGER PUBLIC SAFETY: AND PRESCRIBING PENALTIES FOR VIOLATIONS OF ITS PROVISIONS.

BE IT ORDAINED BY THE COUNCIL OF THE MUNICIPALITY OF _____, COUNTY OF _____, STATE OF _____.

Section I. Short Title.

This Ordinance shall be known and may be cited as the Municipal Tree Ordinance of the Municipality of _____, County of _____, State of _____.

Section 2. Definitions.

For the purpose of this Ordinance the following terms, phrases, words, and their derivations shall have the meaning given herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural include the singular, and words in the singular include the plural. The word *Shall* is mandatory and not merely directory.

I. *Municipality* is the City, Town, Village, Subdivision, or otherwise designated area unit of _____, County of _____, State of _____.

II. *Park and Street Trees Department* is the department of "Parks and Street Trees", "Parks and Forestry", "Forestry", "Street Trees" or other designated department of the municipality under whose jurisdiction park and/or street trees fall.

III. *Municipal Arborist* is the Municipal Arborist, Forester, Tree Warden, or other qualified designated official of the Municipality of _____, County of _____, State of _____, assigned to carry out the enforcement of this Ordinance.

ganization of any kind.

V. *Street or Highway* means the entire width of every public way or right-of-way hen any part thereof is open to the use of the public, as a matter of right, for rposes of vehicular and pedestrian traffic.

VI. *Park* shall include all public parks having individual names.

VII. *Public Places* shall include all other grounds owned by the Municipality _____, County of _____, State of _____.

VIII. *Property Line* shall mean the outer edge of a street or highway.

IX. *Treelawn* is that part of a street or highway, not covered by sidewalk or other ving, lying between the property line and that portion of the street or highway ually used for vehicular traffic.

X. *Public Trees* shall include all shade and ornamental trees now or hereafter owing on any street or any public areas where otherwise indicated.

XI. *Large Trees* are designated as those attaining a height of forty-five (45) feet or ore.

XII. *Medium Trees* are designated as those attaining a height of thirty (30) to rty-five (45) feet.

XIII. *Small Trees* are designated as those attaining a height of twenty (20) to irty (30) feet.

XIV. *Principal Thoroughfare* shall mean any street upon which trucks are not rohibited.

XV. *Property Owner* shall mean the person owning such property as shown by the ounty Auditor's Plat of _____County, State of _____ .

ection 3. **Establishment of a Shade Tree Commission.**

I. There shall be created a commission to be known and designated as "Shade Tree ommission" composed of nine (9) citizens of the Municipality of _____ , a ajority of whom shall be residents of the Municipality of _____or f _____County. Six (6) of said members shall be appointed by the Mayor ith approval of the Council. The seventh (7th) member shall be the Director of ublic Service who shall be an ex-officio member, the eighth (8th) member shall be e Superintendent of the Department of Parks and Street Trees who shall be an x-officio member, and the ninth (9th) member shall be the Municipal Arborist who all be an ex-officio member. All members of the Commission shall serve without ay. The six (6) members appointed by the Mayor shall be appointed as follows: two 2) for two (2) years; two (2) for three (3) years, and two (2) for four (4) years, and rve until their successors are duly appointed and approved by the Council. uccessors to those members appointed by the Mayor shall, thereafter be appointed or terms of four (4) years. Vacancies caused by death, resignation, or otherwise, all be filled for the unexpired term in the same manner as original appointments re made.

II. The duties of said "Shade Tree Commission" shall be as follows:

To study the problems and determine the needs of the Municipality of _____ , County of _____, State of _____, in connection ith its tree planting program.

To recommend to the proper authority, the type and kind of trees to be planted pon such municipal streets or parts of municipal streets or in parks as is designated.

To assist the properly constituted officials of the Municipality of _____ , ounty of _____, State of _____, as well as the Council and itizens of the municipality, in the dissemination of news and information regarding he selection, pla g, and maintenance of trees within the corporate limits, whether

time to time to the Municipal Council as to desirable legislation concerning the tr program and activities for the municipality.

To provide regular and special meetings at which the subject of trees insofar as relates to the municipality may be discussed by the members of the Commissio officers and personnel of the municipality and its several divisions, and all othe interested in the tree program.

III. That within a reasonable time after the appointment of said Commission ar the approval of the members thereof, upon call of the Mayor, said Commission sha meet and organize by the election of a chairman and the appointment of th Municipal Arborist as secretary. The said Commission shall then provide for th adoption of rules and procedures and for the holding of regular and special meetin as said Commission shall deem advisable and necessary in order to perform the duti set forth.

Section 4. **Appointment and Qualifications of the Municipal Arborist.**

The Municipal Arborist shall, where possible, be appointed from a Civil Servi roster established by competitive examination after a personal interview, or whe Civil Service does not exist, by a competitive examination and interview given by t Shade Tree Commission and/or the Park Board of the Municipality _____ , County of _____, State of _____ . Upon sat factory completion of a six (6) months probationary period he shall hold office long as he satisfactorily performs the duties of his office. He shall be a person skill and trained in the arts and sciences of municipal arboriculture, and shall hold college degree or its equivalent in arboriculture, ornamental or landscape hor culture, urban forestry, or other closely related field. In (state) _____ whe there is a State Arborist Examining Board, he shall have passed the sta examination. He shall have had at least three (3) years experience in municipal sha tree work or its equivalent.

Section 5. **Salary.**

The Municipal Arborist shall receive a salary commensurate with his training a experience as full compensation for all services rendered and in lieu of all fees.

Section 6. **Duties.**

The Municipal Arborist shall have the authority to promulgate the rules a regulations of the Arboricultural Specifications and Standards of Practice governi the planting, maintenance, removal, fertilization, pruning, and bracing of trees on t streets or other public sites in the municipality, and shall direct, regulate, and cont the planting, maintenance, and removal of all trees growing now or hereafter in a public area of the Municipality of _____, County of _____, St of _____. He shall cause the provision of this Ordinance to be enforced. his absence these duties shall be the responsibility of a qualified alternate designat by the municipality.

Section 7. **Authority of the Municipal Arborist.**

I. The Municipal Arborist shall have the authority and jurisdiction of regulati the planting, maintenance, and removal of trees on streets and other publicly own property to insure safety or preserve the aesthetics of su blic sites.

duty to supervise or inspect all work done under a permit issued in accordance n the terms of this Ordinance.

II. *CONDITION OF PERMIT.* The Municipal Arborist shall have the authority to x reasonable conditons to the granting of a permit in accordance with the terms his Ordinance.

V. *MASTER STREET TREE PLAN.* The Municipal Arborist shall have the ority to formulate a Master Street Tree Plan with the advice, a hearing, and roval of a Shade Tree Commission. The Master Street Tree Plan shall specify the cies of tree to be planted on each of the streets or other public sites of the icipality. From and after the effective date of the Master Street Tree Plan, or any ndment thereof, all planting shall conform thereto.

A. The Municipal Arborist shall consider all existing and future utility and ronmental factors when recommending a specific species for each of the streets other public sites of the municipality.

3. *Amend.* The Municipal Arborist, with the approval of the Shade Tree mission, shall have the authority to amend or add to the Master Street Tree Plan ny time that circumstances make it advisable.

tion 8. **Permits Required.**

. *PLANTING, MAINTENANCE, OR REMOVAL.*

A. No person shall plant, spray, fertilize, preserve, prune, remove, cut above und, or otherwise disturb any tree on any street or municipal-owned property hout first filing an application and procuring a permit from the Municipal orist or otherwise specified municipal authority. The person receiving the permit ll abide by the Arboricultural Specifications and Standards of Practice adopted by Municipal Arborist.

B. Application for permits must be made at the office of the Municipal Arborist less than forty-eight (48) hours in advance of the time the work is to be done.

C. *Standards of Issuance.* The Municipal Arborist shall issue the permit provided herein if, in his judgment, the proposed work is desirable and the proposed thod and workmanship thereof are of a satisfactory nature. Any permit granted ll contain a definite date of expiration and the work shall be completed in the e allowed on the permit and in the manner as therein described. Any permit shall void if its terms are violated.

D. Notice of completion shall be given within five (5) days to the Municipal orist for his inspection.

II. *PLANTING.*

A. *Application Data.* The application required herein shall state the number of es to be set out; the location, grade, species, cultivar or variety of each tree; the thod of planting; and such other information as the Municipal Arborist shall find sonably necessary to a fair determination of whether a permit should be issued.

B. *Improper Planting.* Whenever any tree shall be planted or set out in conflict h the provisions of this section, it shall be lawful for the Municipal Arborist to ove or cause removal of the same, and the exact cost thereof shall be assessed to owner as provided by law in the case of special assessments.

A. *Application Data.* The application required herein shall state the number and kinds of trees to be sprayed, fertilized, pruned, or otherwise preserved; the kind of treatment to be administered; the composition of the spray material to be applied and such other information as the Municipal Arborist shall find reasonably necessary to a fair determination of whether a permit should be issued.

IV. *REMOVAL, REPLANTING, AND REPLACEMENT.*

A. Wherever it is necessary to remove a tree or trees from a treelawn in connection with the paving of a sidewalk, or the paving or widening of the portion of a street or highway used for vehicular traffic, the municipality shall replant such trees or replace them. Provided that conditons prevent planting on treelawns, this requirement will be satisfied if any equivalent number of trees of the same size and species as provided for in the Arboricultural Specifications are planted in an attractive manner on the adjoining property.

B. No person or property owner shall remove a tree from the treelawn for the purpose of construction, or for any other reason, without first filing an application and procuring a permit from the Municipal Arborist, and without replacing the removed tree or trees in accordance with the adopted Arboricultural Specifications. Such replacement shall meet the standards of size, species, and placement as provided for in a permit issued by the Municipal Arborist. The person or property owner shall bear the cost of removal and replacement of all trees removed.

Section 9. **Obstruction - Trees Pruned.**

It shall be the duty of any person or persons owning or occupying real property bordering on any street upon which property there may be trees, to prune such trees in such manner that they will not obstruct or shade the street lights, obstruct the passage of pedestrians on sidewalks, obstruct vision of traffic signs, or obstruct view of any street or alley intersection. The minimum clearance of any overhanging portion thereof shall be ten (10) feet over sidewalks, and twelve (12) feet over all streets except truck thoroughfares which shall have a clearance of sixteen (16) feet.

I. *NOTICE TO PRUNE.* Should any person or persons owning real property bordering on any street fail to prune trees as herein above provided, the Municipal Arborist shall order such person or persons, within three (3) days after receipt of written notice, to so prune such trees.

II. *ORDER REQUIRED.* The order required herein shall be served by mailing a copy of the order to the last known address of the property owner, by certified mail.

III. *FAILURE TO COMPLY.* When a person to whom an order is directed shall fail to comply within the specified time, it shall be lawful for the municipality to prune such trees, and the exact cost thereof shall be assessed to the owner as provided by law in the case of special assessments.

Section 10. **Abuse or Mutilization of Public Trees.**

Unless specifically authorized by the Municipal Arborist, no person shall intentionally damage, cut, carve, transplant, or remove any tree; attach any rope, wire, nails, advertising posters, or other contrivance to any tree, allow any gaseous, liquid, or solid substance which is harmful to such trees to come in contact with them; or set fire or permit any fire to burn when such fire or the heat thereof will injure any portion of any tree.

No person shall hinder, prevent, delay, or interfere with the Municipal Arborist or any of his assistants while engaged in carrying out the execution or enforcement of this Ordinance; provided, however, that nothing herein shall be construed as an attempt to prohibit the pursuit of any remedy, legal or equitable, in any court of competent jurisdiction for the protection of property rights by the owner of any property within the municipality.

Section 12. **Protection of Trees.**

All trees on any street or other publicly owned property near any excavation or construction of any building, structure, or street work, shall be guarded with a good substantial fence, frame, or box not less than four (4) feet high and eight (8) feet square, or at a distance in feet from the tree equal to the diameter of the trunk in inches D.B.H., which ever is greater, and all building material, dirt, or other debris shall be kept outside the barrier.

No person shall excavate any ditches, tunnels, trenches, or lay any drive within a radius of ten (10) feet from any public tree without first obtaining a written permit from the Municipal Arborist.

Section 13. **Placing Materials on Public Property.**

No person shall deposit, place, store, or maintain upon any public place of the municipality, any stone, brick, sand, concrete, or other materials which may impede the free passage of water, air, and fertilizer to the roots of any tree growing therein, except by written permit of the Municipal Arborist.

Section 14. **Violation and Penalty.**

Any person, firm, or corporation violating or failing to comply with any of the provisions of this Ordinance shall be guilty of misdemeanor, and upon conviction thereof shall be fined a sum no less than one ($1.00) dollar, nor more than five thousand ($5,000.00) dollars, or may be imprisoned for a term not exceeding sixty (60) days, or both.

Section 15. **Legality of Ordinance and Parts Thereof.**

Should any section, clause, or provisions of this Ordinance be declared by the Courts to be invalid, the same shall not affect the validity of the Ordinance as a whole, or parts thereof, other than the part so declared to be invalid.

Section 16. **Emergency.**

This Ordinance is hereby declared to be of immediate necessity for the preservation of public peace, health, and safety, and shall be in full force and effective from and after its passage and publication as provided by law.

Passed this _____ day of _____ , 19 ___ .

Signed this _____ day of _____ , 19 ___ .

_____ , Mayor

Attest: _____ , Municipal Clerk

I. ARBORICULTURAL SPECIFICATIONS AND STANDARDS OF PRACT

The Municipal Arborist shall have the authority to promulgate the rules regulations of the Arboricultural Specifications and Standards of Practice gover the planting, maintenance, removal, fertilization, pruning, and bracing of trees or streets or other public sites in the municipality.

A. Policy

1. All work on public trees shall comply with the "Municipal Tree Ordinanc the Municipality of _____, County of _____, State _____ .

2. The Arboricultural Specifications and Standards of Practice shall be adher at all times, but may be amended at any time that experience, new research, or indicate improved methods, or whenever circumstances make it advisable, wit approval of the Shade Tree Commission.

3. The policy of the Department of Parks and Street Trees shall be on cooperating with the public, property owners, other municipal departments, appropriate not-for-profit organizations at all times.

4. No trees shall be removed from public places unless they constitute a haza life or property, a public nuisance, or because a revision of planting necessitates.

B. Species, Cultivars, or Varieties

1. The Municipal Arborist shall prepare lists of trees acceptable for planting i public sites of the Municipality of _____, County of _____, of _____. Undesirable trees shall not be recommended for general pla and their use, if any, shall be restricted to special locations where, because of ce characteristics of adaptability or landscape effect, they can be used to advantage

2. Only desirable, long-lived trees of good appearance, beauty, adaptability generally free from injurious insects or disease shall be planted in public sites. Shade Tree Commission, in conjunction with the Municipal Arborist, shall revi least once every two (2) years the species, cultivars, and varieties included o approved list to determine if any should be removed for any reason or if certain species, cultivars, or varieties of proven dependability and value should be added

3. Where street blocks have been assigned a particular species or variety o Master Street Tree Plan, only these shall be planted subject to revision by Municipal Arborist and approval by the Shade Tree Commission.

C. Planting

1. *SIZE*

a. Unless otherwise specified by the Municipal Arborist, all medium to deciduous tree species and their cultivars and varieties, shall conform to Ame Association of Nurserymen Standards and be at least 1 ¼ to 1 ½ inches in diar six (6) inches above ground level, and at least eight (8) to ten (10) feet in h when planted. The crown shall be in good balance with the trunk.

b. All small deciduous tree species and their cultivars or varieties, shall be at five (5) to six (6) feet or more in height and have six (6) or more branches.

a. Unless otherwise allowed for specific reasons, all trees shall have comparatively traight trunks, well developed leaders and tops, and roots characteristic of the pecies, cultivar, or variety showing evidence of proper nursery pruning. All trees must be free of insects, diseases, mechanical injuries, and other objectionable features t the time of planting.

3. *LOCATION AND SPACING*

a. Based on a 40-year cycle, no tree which will attain a trunk diameter greater han twelve (12) to fifteen (15) inches shall be planted in a treelawn less than three 3) to five (5) feet in width. In treelawns less than three (3) feet in width, or where verhead lines or building setback presents a special problem, the selection of site nd species shall be determined by the Municipal Arborist.

b. Where there is a treelawn less than three (3) feet in width, legal steps should be aken to obtain easement rights to plant beyond the sidewalk on private property. Such easements should contain provisions granting the municipality permission to elect, plant, maintain, and remove such trees under the direction of the Municipal Arborist.

c. Trees shall be planted at least thirty (30) feet from street intersections and at east fifteen (15) feet from driveways and alleys.

d. No tree shall be planted closer than ten (10) feet of a utility pole.

e. Spacing of trees should be determined by the Municipal Arborist according to ocal conditions, the species, cultivars, or varieties used, their mature height, spread, nd form. Generally, all large trees shall be planted forty (40) to sixty (60) feet on center; all medium-sized trees shall be planted a minimum of thirty-five (35) feet on center; and all small trees shall be planted a minimum of twenty-five (25) feet on center.

f. All planting on unpaved streets without curbs must have the special permission of the Municipal Arborist who shall determine the tree's location so it will not be injured or destroyed when the street is curbed and paved.

4. *METHODS OF PLANTING AND SUPPORT*

a. Most small deciduous trees may be moved bare-rooted unless otherwise ndicated. Roots of bare-rooted trees should be protected against drying out.

b. All coniferous trees shall be moved balled and burlapped. Balled roots should be prevented from drying out at the surface of the ball and protected against injurious freezing.

c. Pits dug for planting of bare-root plants shall be a minimum of twelve (12) inches larger in diameter than the diameter of the root system so as to be of sufficient size to accommodate the roots without crowding. For balled trees, the pits shall be a minimum of twelve (12) inches larger in diameter than the diameter of the ball of soil to allow proper backfill.

d. Plants shall be planted no deeper than previously grown, with due allowance for settling.

e. In poorly drained soil, artificial drainage shall be provided to properly drain the soil about the plant roots or tolerant species selected.

f. Acceptable top soil, compost, peat moss, or other acceptable soil mixtures shall be placed about the roots, or in the backfill around the ball. When the planting is completed, the entire root area shall be thoroughly saturated with water.

g. Excessive pruning at the time of transplanting should be avoided. The extent of top pruning should be based on the ability of the plant roots to function.

h. Trees shall be suitably wrapped and guyed, or supported in an upright position, according to ac ted arboricultural practices. The guys or supports shall be fastened

safety.

D. Early Maintenance

1. *GENERAL*

a. Newly planted trees require special attention to maintenance practices du one or two growing seasons following planting. All maintenance practices shall fol approved arboricultural standards.

2. *WATERING*

a. Ample soil moisture shall be maintained following planting. A thoro watering each five (5) to ten (10) days, depending on soil type and drain provisions, is usually adequate during the growing season. A soil auger or sampl tube is used to check the adequacy of moisture in the soil ball and/or backfill.

3. *FERTILIZATION*

a. Provision of good drainage and adequate moisture of the prepared backfill, the soil ball of balled plants, is more important than fertilization immediat following planting. However, adequate quantities of the essential nutrient eleme should be available after new growth starts.

4. *INSECT AND DISEASE CONTROL*

a. Measures for the control of insects and diseases shall be taken as sho necessary by frequent and thorough inspections. Plants in a weakened condit following transplanting are often more susceptible to insects, especially borers, some diseases than are vigorously growing trees. Where it is necessary to spr insecticides or fungicides shall be used that are recommended for safe and effect control.

5. *PRUNING*

a. Pruning practices to be followed the first few years following planting sh consist of removing dead, broken, or injured branches, the suppression of ra uneven growth, and usually the removal of water sprouts. Feather growth shall removed as it reaches pencil size in diameter.

b. Pruning shall be practiced subsequent to transplanting and as necessa thereafter to assure sturdy crotch development.

c. Tree heads should be raised as growth characteristics and location dictat Newly planted trees need not have lower branches removed until they are w established. Eventually, trees should have the lower branches removed to a height at least seven (7) feet, unless in areas where lower branches do not impede traffic.

E. General Maintenance

1. *PRUNING AND REMOVAL*

a. No topping or dehorning of trees shall be permitted except by writt permission of the Municipal Arborist. Proper cabling and bracing shall be substitut for this practice wherever possible.

b. All large, established trees shall be pruned to sufficient height to allow fr passage of pedestrians and vehicular traffic: ten (10) feet over sidewalks and twe (12) feet over all streets except those that are subject to truck traffic which sh have a clearance of sixteen (16) feet.

c. It shall be the policy of the Municipal Arborist to cooperate with the Municip or Utility Lighting Engineer, and vice-versa, in the placement and height of lighti standards and the development of a system of tree pruning to give effective stre illumination.

d. All cuts shall be made with a saw or pruner and only at the nodes or crotch

stubs shall be left. No spurs or climbing irons shall be used in the trees, except ıen trees are to be removed.

e. All dead, crossed, and rubbing branches shall be removed.

f. All wounds over two (2) inches in diameter shall be treated with a suitable tree)und dressing.

g. All tools being used on a tree suspected to be infected with a contagious disease ıll be disinfected before being used on another tree.

h. Whenever streets are to be blocked off to public service, police and fire partments shall be notified of the location and length of time the street will be)cked. Notification shall be given these departments upon the removal of such rriers or if such barriers are to remain longer than originally expected.

i. To protect the public from danger, suitable street and sidewalk barriers, ghway cones, or signs shall be used when pruning a tree. Flashing signals or flares all be placed on all barriers or obstructions remaining in the street after dark.

j. The stumps of all removed trees shall be cut to at least three (3) inches below e ground, and soil shall be replaced and the area leveled. If the area where the tree removed is to be paved, the tree should be cut or stump removed at least six (6) ches below the ground.

2. *SPRAYING*

a. Suitable precautions shall be taken to protect and warn the public that spraying being done.

b. Spraying shall be done only for the control of specific diseases or insects, with ıe proper materials in the necessary strength, and applied at the proper time to btain the desired control. All spraying practices shall conform to federal and state gulations.

c. Dormant oil sprays shall not be applied to sugar maple, Japanese maple, beech,)wering dogwood, hickory, walnut, and most crabapple trees. Dormant oil sprays ıall be applied to other trees only when the air temperature is 40°F or above and hen it is not likely to drop below this temperature for a period of twenty-four (24))urs.

3. *FERTILIZATION*

a. Fertilization of public trees shall follow the National Arborist Association or ther accepted arboricultural standards.

b. Formulations, rates, and methods of application of fertilizers shall be specified y the Municipal Arborist.

4. *CAVITIES*

a. Extensive cavity work should be performed on trees only if they are sufficiently igh in value to justify the cost. All cavity work shall conform to the National rborists Association or other accepted arboricultural standards.

5. *CABLING AND BRACING*

a. As a general rule, cables should be placed approximately two-thirds (2/3) of the istance between the crotch and top branch ends. Rust-resistant cables, thimbles, and igs should be used. The ends of a cable should be attached to hooks or eyes of lags r bolts, and thimbles must be used in the eye splice in each end of the cable. In no nstances shall cable be wrapped around a branch.

b. All cabling and bracing practices with screw rods shall follow National Arborist Association or other accepted arboricultural standards.

F. Amend

The Municipal Arborist shall have the authority to modify, amend, or extend, with the approval of the Shade Tree Commission, the Arboricultural Specifications nd Standards o ctice at any time that experience indicates improved methods or whenever circumstances make it advisable.

A SUGGESTED PERMIT
TREE WORK PERMIT

(Issue in Triplicate)

THE MUNICIPALITY OF _____,

COUNTY OF _____,

STATE OF _____,

Office of Municipal Arborist

APPLICATION NO. _____

DATE _____

Planting, Maintenance, Removal

STREET: _____

REMARKS: _____

_____

_____

If permit is granted, I hereby agree to do the work in accordance with the Arboricultural Specifications and Standards of Practice, and directives given on the reverse side of this application.

Signed: _____
(Property Owner)

By: _____
(Agent or Tenant)

(application not to be filled in below this line)

Inspectors Report

Date: _____

Width of planting strip _____ feet.
Width of sidewalk _____ feet.
Width of roadway _____ feet.
Total width of street _____ feet.
Building setback from sidewalk _____ feet.
Zoned for _____
Type of buildings _____
_____
Height overhead lines _____ feet.
Kinds of existing trees in block _____
_____
Approximate size _____
General condition _____
Name of proposed tree _____
Signed: _____ Inspector
Date: _____
Application approved by: _____
(Municipal Arborist)
Date: _____
Permit Issued _____ 19__
Permit Expires _____ 19__
Date Tree Planted _____ 19__
Name and address of planter: _____ _____

The tree is to be from _____ ( ) to _____ ( ) inches in caliper (six (6) inches above the ground), free of disease, insects, and mechanical injury, straight of stem with a well balanced top, of vigorous growth, and a well developed root system. The trunk is to be free of branches to a height of at least _____ ( ) feet from the ground and the first branch to be not over _____( ) feet from the ground unless otherwise specified by the Municipal Arborist. All trees used in the same block shall be pruned to secure similar height, shape, and size.

2. Tree Pit

The exact location of the tree pit is to be determined by the Municipal Arborist.

The tree pit is to be excavated at least _____( ) square feet in area and _____( ) feet deep, refilled with a mixture of good friable top soil and peat moss as specified by the Municipal Arborist. All excess subsoil is to be hauled away. When a hardpan is found at the bottom of the pit, it is to be loosened to an additional depth of at least one (1) foot. When rock is encountered, it is to be removed to an additional depth of at least one (1) foot and an additional width of at least one (1) foot on all sides of the tree pit.

3. Tree Planting

The work of planting is to be done under the direction and to the satisfaction of the Municipal Arborist. His office is to be notified not less than forty-eight (48) hours in advance of the planting so an inspector can be assigned, and the tree is not to be planted until he inspects it and gives a release in writing.

The tree is to be planted at the same depth as it was originally growing. As the soil is added around the roots it is to be carefully tamped and watered thoroughly.

4. Staking and Wrapping

A. Stakes, as specified by the Municipal Arborist, shall be provided for each small tree planted. The stakes are to be driven firmly into the soil of the tree pit bottom, in line with the tree and parallel to the street, and fastened to the tree with wire enclosed in rubber hose, the guy wire to be completely covered where it encircles the trunk of the tree. The stake should not come in contact with the tree. Other methods of support may be followed if approved by the Municipal Arborist.

B. The tree trunk is to be wrapped with approved materials as is specified by the inspector.

5. Tree Guards and Gratings

Where deemed necessary by the inspector, tree guards and gratings, of approved type, are to be placed around the trees.

6. Care and Cultivation

Every tree is to be thoroughly watered as often as inspection shows the necessity, cultivated when necessary, and properly cared for by the adjoining property owner for two (2) growing seasons at his expense, unless these responsibilities are assumed by the municipality, and to the satisfaction of the Municipal Arborist.

7. Trees to Become Property of the Municipality

The above trees are to become the property of the municipality after a period of two (2) years. Thereafter, no work, aside from watering and cultivation, shall be done except by the municipality or with the Municipal Arborist's written consent.

8. Other Specifications

Specifications applying to pruning, other maintenance practices not covered above, or removal will be issued for each specific case and attached to, and will become a part of, this permit.

9. Liability

All the work referred to above, shall be performed without cost to the municipality. The holder of this permit agrees not to hold the Municipality of _____, County of _____, State of _____, or any employees thereof, responsible for any liability by accident to person or property, however caused, through the exercise of this permit. Any tree improperly planted will be subject to removal by and at the direction of the Municipal Arborist with the costs of removal assessed to the holder of this permit.

APPENDIX 31.

Extracts from Urban Trees and Forest Legislation in Ontario

O-X-282

ISSN 0704-7797

URBAN TREE AND FOREST LEGISLATION IN ONTARIO

J. W. ANDRESEN

and

J. SWAIGEN

Environment Canada
Forestry Service

Environnement Canada
Service des Forêts

112. S. 42(1).
113. S. 42(5) and s. 42(7).
114. Part II of the Act.
115. S. 33.
116. S. 33(5).
117. S. 33(5)(d).
118. S. 33(5)(a).
119. S. 20(k), s. 27(1).
120. S.O. 1975, c. 69.
121. S. 3, s. 30.
122. S. 5.
123. S. 7(2).
124. S. 12(2)(b).
125. See EA Update, May 1977, Vol. II, No.3, for draft Order-in-Council, appointing Mr. Justice Patrick Hartt to conduct the Inquiry.
126. S.O. 1974, c. 122, as amended by S.O. 1975, c. 87.
127. S. 10.
128. Part IV.

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Brodie, D. A. A Condensation of the Report of the Forestry Study Unit, Ontario Department of Lands and Forests, 1967.

Corbett, Marie. "The Ontario Municipal Board: Planning and Zoning Cases", Osgoode Hall Law Journal, June 1976, Vol. 14, No. 1, P. 93.

Goodwin, C. E. "Trees and Roads", Conservation Council of Ontario, 1970.

Kennedy. See Literature Cited, chapter 2.

Pollard, R. S. W. "Trees and the Law", leaflet No. 6, Arboricultural Association, undated.

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4. BRITISH AND AMERICAN LEGISLATIVE EXAMPLES

4.1 The English Experience

Since we often look to Britain for legal precedents, we offer the following summary of England's tree-related laws and in particular a discussion of Tree Preservation Order legislation.

As reviewed by Pollard (1974), English law, except for the Cromwellian interim of 1649-1660, has evolved since the thirteenth century. Most of the laws affecting property rights and attendant vegetation were formed by decisions of the law courts. Pollard states that:

> "Despite the increasing output of Acts of Parliament since the 1830s much of English law still remains embodied in decisions of the courts and new law is constantly being made by them. This non-statutory law, conventionally called Common Law, may be more flexible than Statutory Law since it is amenable to development through change by judges' understanding of, and response to, new social circumstances. It has however the defect that it is often difficult to state with certainty what the law is where no case has been decided on a particular point.[1]"

In addition to the legal regulations that apply to Britain's trees, changing economic and land-use patterns also influence arboreal management.

It has been estimated that 60% of England's trees are found along rural and suburban hedgerows. But the trees and shrubs growing along these historical boundary lines are subject to the vagaries of time and space. Biologically, under present management systems and environmental conditions, the woody plants that formerly composed the geometric web of property and field boundary hedges are assuming different life forms. These rows of once well tended and sheared European beech, elm, hawthorn, holly and ironwood have fallen prey to several ailments. First, the labor force that maintained the hedgerows is almost extinct. High labor costs, lack of interest in agricultural endeavors, and shortages of young arboricultural trainees have allowed the hedge trees either to fall into decay or to sprout with rampant growth. Further, changing agricultural practices (encouraged by Parliament), under the guise of more efficient land management to increase productivity, call for the removal of hedgerows to enlarge existing fields.

Dutch elm disease (DED), which in some parts of southern England has killed most of the elms within the past 5 years (England's woodlands and hedgerows are composed of between 20% and 40% elms of several species), has created a dual malaise. Not only have the English treescapes lost their aesthetic integrity but, more to the point of this report, dying and dead elms have created myriads of complicated lawsuits as falling limbs and trunks indiscriminately damage property and injure livestock and people. Who is ultimately responsible for the removal of dead trees under common ownership? An example of a positive approach which is retarding the spread of DED is found in East Sussex where the County Authority pays for dead elm removal from both public and private property. Unfortunately, in most of the United Kingdom (DED is appearing in Scotland, Wales and Ulster as well), because of lack of funds, responsibility goes unanswered while DED continues unabated.

Further to the legal responsibilities attendant to trees on boundaries, Pollard commented that:

> "There is no obligation at common law to cut a hedge or to lop or top a tree on the boundary of a property, however much the neighbouring landowner may object to it. An adjoining landowner may in law cut off any branch which overhangs his land without notice to the owner of the tree. But he may not go on to the land of the owner of the tree to do this. Branches which are cut off, and any fruit growing on branches and fallen fruit, still belong to the owner of the tree and, if they are not returned to him, he could sue the neighbour who cut them for their value. It is not permitted to lop branches as a precaution before they overhang neighbouring land. If fruit from a tree falls on neighbouring land the owner of the tree may enter the other land to take his fruit--provided that he does not stay on the land longer than necessary and does not do any damage by doing so. If in the course of pruning the tree branches fall on to neighbouring land this can be justified but the work must be done as carefully as possible. There is no right to enter a neighbour's land in order to prune a tree. There is no legal right to poison the encroaching roots of a tree. If roots are damaged and the neighbour's tree is consequently injured the landowner using the weed killer or other chemical will be liable for damages.[2]"

The responsibility of the owner for both the protection of his own boundary trees and shrubs and the damage they may create will probably be further confounded as urban encroachment continues on former rural land. Existing property lines delineated by trees will be altered or erased by subdivision development and the variety as well as the number of boundary trees will continue to decline. Judicial prohibition of damage and destruction to privately and publicly owned trees and shrubs is currently incorporated within one comprehensive statute--the *Criminal Damage Act* of 1971. Under the act, it would be a criminal offence, without lawful excuse, to damage or destroy another property owner's trees. Maximum court penalty for wilful tree destruction is imprisonment for 6 months, a 400 pound fine, or both. If personal injury or death results from cutting or weakening another's tree and if the offender is tried and convicted, the individual is liable to a maximum 10-year prison sentence.

One controversial provision within the act is that a person may pick fruit, flowers, or foliage from trees growing "wild", but may not break or remove a branch. The issue of what is "wild" and what

constitutes a "branch" leads to endless debate (neither term is explicitly defined in the act). Is an apple tree growing in an abandoned orchard "wild" even if in view of the owner's residence? Or does a twig bearing this year's increment of blossoms and leaves constitute a "branch"?

Interpretation of ancient English common law governing harvesting privileges of trees and forest products on common land has also become very technical and complicated. Constant litigation ensues betwen those individuals who hold to their ancestral prerogatives and individuals or groups who regard the village or town commons as communal land deserving the status of a botanical or wildlife sanctuary.

The British Forestry Commission, an autonomous federal organization combining features and functions of the Canadian Forestry Service and the Ontario Ministry of Natural Resources, also holds regulatory powers that affect trees of public and private ownership. Under provisions stipulated within the *Plant Health Act* of 1967, the Commission may direct or authorize, under order, the removal or destruction of trees or shrubs that harbor pathogenic diseases or insect vectors that are liable to spread infections or infestations to other woody plants, thereby endangering forest resources. With the current DED epidemic in Great Britain, the magnitude of mandatory removal of millions of large trees growing on private property where owners do not have to pay for that removal has immobilized the meaningful enforcement of most removal orders.

With respect to comprehensive household insurance coverage, it is usually required that the report of a registered (or equivalent) arboriculturist be submitted to an insurance company before a rider is added to the policy that would cover damage done by trees to adjoining property or persons.

4.1.1 Tree preservation orders: Tree preservation orders prohibit anyone, including the tree's owner, from mutilating or destroying a tree which has been designated by the authorities as having high amenity value. Regulations attendant to tree preservation order legislation are probably the most environmentally enlightened and comprehensive of any tree and forest conservation measures in the western world (Hall 1970). In his review of tree preservation orders, Hardy (1972) reminded his readers that the orders had their origin in the *Town Planning Act* of 1909 and the later model clauses of the 1929-1932 acts. At that time, a municipal council had the jurisdiction to deny destruction of trees by either public bodies or private individuals if the trees were registered as having amenity value to the community at large. Improvements and revisions to tree preservation order legislation were introduced through the *Civil Amenities Act* of 1967, the *Town and County Planning Act* of 1968, and the *Trees Act* of 1970 (Hall 1970).

Further, authority to issue the orders was given to local planning authorities rather than to municipal councils (Wilson 1971).

Specifically, a tree preservation order is issued under the provisions of section 29 of the *Town and County Planning Act* of 1962 as amended by provisions of section 81 of the *Town and County Planning Act* of 1968 and section 16 of the *Civic Amenities Act* of 1967. According to the Arboricultural Association (Hall 1970),

> "A Tree Preservation Order, therefore, becomes a registerable charge against a property with penalties for contravention as set out in section 62(1) of the principal Act as amended by section 15 of the *Civic Amenities Act*, 1967. These sections of the Acts are framed to prevent the needless destruction or maltreatment of trees and are neither intended nor used to interfere with the requirements of good arboriculture or forestry. Properly administered, an Order can strengthen the hand of the discerning owner of trees, but the existence of a T.P.O. does not in any way exonerate the owner of a preserved tree from his responsibilities as established in Common Law."

Issuance and regulation of tree preservation orders falls within specified jurisdiction.

> "Only a local planning authority (i.e. a County Council or a County or London Borough Council) or a District or County District Council acting under delegated powers can promote an Order. The Minister confirms Orders on which objections or representations are made but section 81 of the *Town and Country Planning Act*, 1968 confers powers on the L.P.A. to confirm Orders where no objections or representations to making the Order are received. Section 16 of the *Civic Amenities Act* enables the L.P.A. to direct that an Order shall take immediate effect pending confirmation by the Minister during a maximum period of six months."

An owner of a tree or trees has the right to object to the assignment of tree preservation orders on his property if he feels the order is unwarranted or interferes with his common or legal rights.

"The owner or his legal representative may lodge an objection to the Minister during the 28 days which are prescribed by the Act. In this case, the Minister will normally ask the L.P.A. officers to meet the objector, explain the reasons for the Order, and seek his agreement. Should the owner maintain his objection, the matter is decided by the Minister, who after a local hearing by one of his inspectors, may decide not to confirm the Order, or to confirm it with or without modification. Powers exist for the revocation or amendment of an Order or part of an Order by the Minister in exceptional cases. If no objections are received the L.P.A. has the power to confirm the T.P.O. itself."

Tree preservation orders prohibit unauthorized pruning and treatment as well as felling. Requests for cultural work by the tree's owner are seldom detailed but must be approved by the local planning authority before any work begins.

"The L.P.A. may if it thinks necessary stipulate the precise extent of any arboricultural work requested. If, however, a tree or limb becomes a hazard to safety, e.g. through storm damage, then remedial work or felling may take place immediately, but the owner must be prepared to justify his action to the L.P.A. A tree which dies from natural causes may be felled without the necessity of obtaining the consent of the L.P.A., but it is now incumbent on the owner to replace any tree which was covered by the Order at the time of its inception although again not necessarily by one of the same species.

The Order allows for the L.P.A. to require at its discretion the replacement of any tree which is felled although not necessarily by one of the same species. In the case of woodlands replanting is obligatory and can only be dispensed with by the Minister and not by the L.P.A. alone. Furthermore, replanting directions specify exact numbers, spacing, sizes, and species of tree to be replanted, together with details of protection and maintenance.

The owner of a tree protected by a T.P.O. may apply for permission to fell the tree, but the L.P.A. will of course consider the application from the public as well as the owner's viewpoint."

The Minister (or his representative) in England is the Secretary of State for the Environment; in Scotland and in Wales he is the Secretary of State.

Standards for tree treatment, which unfortunately are poorly defined in Canada, are explicit and of high calibre in the United Kingdom. Since all work to trees covered by tree preservation orders must be approved by the local planning authority the following applies:

> "The criteria which the Minister requires the L.P.A.'s to uphold are those contained in British Standard No. 3998 (1966), "Recommendations for Tree Work". (ref. Hansard, 8th February 1967, Col. 105-110.)[3]"

Further, it is recommended that all tree work should be entrusted only to arboricultural operators or firms that can guarantee results and that are recognized as completely reliable. Inferior work becomes the responsibility of the owner. Under order enforcement, he is subject to prosecution.

Penalties are incumbent upon an individual who inadvertently or with forethought damages or destroys a tree dedicated under a tree preservation order. He is subject to a substantial fine which may be imposed in addition to other property damage penalties described earlier. In particular:

> "The maximum fine for each major offence is 250 Pounds or twice the timber value of the tree, whichever is the greater. If in the case of a continuing offence the contravention is continued after conviction, the fine is 2 Pounds per day. It has been established that both the tree feller and the owner can be held liable where a contravention occurs. Major offences are deemed to be (i) unauthorized felling, and (ii) mutilation carried out in such a manner as to be likely to destroy it as an amenity tree.[4]"

To avoid unnecessary punitive action and as a more positive approach, citizen action by concerned individuals can be an adjunct to the protection of trees. A telephone call or visit to a local planning authority reporting an impending violation or a tactful reminder to a possible offender of his responsibilities can avert a contravention of a tree preservation order.

In spite of this relatively sophisticated tree protection legislation and civic vigilance, abuses to trees still occur. Decline and death of trees registered for protection do not usually result from malicious intent but rather from ignorance of biological processes and lack of order enforcement. A number of trees observed by one of the

authors during a 1976 study tour of southern England were legally posted (sign *nailed* to tree) with numbered tree preservation orders, but in virtually every case the tree's root system had been disturbed. Trenching for utility conduits within 5 ft (1.5 m) of the trunk, lowering or raising soil grade close to the tree, spilling of gas and oil beneath the shade of the crown, and incorporation of detrimental building debris within the root zone were common occurrences. All of these careless practices create conditions that lead to early mortality of trees both young and old.

One of the weaknesses of the scheme is that orders prevent trees from being felled, but they do not place any obligation on owners to maintain their trees and woodlots properly. Owners may allow trees to decay or die and allow woodlots to deteriorate without taking preventive action despite a tree preservation order. The British Arboricultural Association has recommended on a number of occasions that positive provisions regarding maintenance should be incorporated into the scheme, public money should be spent to cover the cost of maintenance borne by the owner, and the local planning authorities should be allowed to maintain trees under orders (Arboricultural Association and Rickards).

As a further complication, and because of increasing budgetary constraints, arboriculture officers who normally would enforce the orders simply cannot keep ahead of the building and constructions crews nor can they monitor the tree sites to determine or prevent damage.

It is to be hoped that we can employ enough municipal forestry personnel to avoid a repetition of the British problem. Reform of our own Canadian tree preservation legislation without enforcement would be a frightful waste.

4.2 American Selections

Protection of trees in and adjacent to the settlements of early British North America was reinforced by legislation within a decade of the Pilgrims' landing. A law enacted in 1628 forbade the sale or transport of wood out of the Plymouth Colony without approval by the governor and council. By 1668, the Massachusetts Bay Colony had passed protective restrictions to reserve ship timbers. These rules were codified in the formal Massachusetts Bay Colony Charter of 1691.

Fuelwood for Atlantic cities such as Providence and Philadelphia was in short supply during colonial times, so numerous restrictive regulations were placed on the cutting of wood from the "commons" and Crown land (Dana 1956). Benjamin Franklin observed in 1774 that:

> "Wood our common fuel which within these hundred years might be had at any man's door, must now be fetched near 100 miles to some towns, and makes a considerable article in the expense of families (Chinard 1945)."

Many of the laws, however, were evaded as friction developed between the American colonies and England, and as emerging cities began to compete with one another for forest products. Further, the laws established in both pre- and post-federation years (and until the 1880s) were geared to interim tree protection for ultimate consumption and not for environmental conservation or preservation.

4.2.1 Federal programs: It was not until 1876, when the American Association for the Advancement of Science prompted the American Congress to investigate the conditions of the nation's federal lands, that meaningful public concern was manifested to protect trees and forests for environmental values. From this start grew the structure of the bureaus and services within the Departments of Agriculture and the Interior that were heralded to conserve and monitor renewable natural resources. Attendant legislation also was formulated to preserve natural ecosystems for future generations. About this time, encouraged by the federal example, most of the states east of the Plains also reviewed the status of their resources through a multitude of surveys directed by forestry and related commissions.

As a contemporary framework, and of direct applicability to the urban scene, was the passage of Public Law 92-288 on 5 May, 1972. This urban-oriented act which amended the *Co-operative Forest Management Act* of 25 August, 1950, reads in part:

> "Section 1. The Secretary of Agriculture is hereby authorized to co-operate with State foresters or appropriate officials of the several states, territories, and possessions for the purpose of encouraging the states, territories, and possessions to provide technical services to private landowners, forest operators, wood processors, and public agencies, with respect to the multiple-use management and environmental protection and improvement of forest, lands, the harvesting, marketing and processing of forest products, and the protection, improvement, and establishment of trees and shrubs in urban areas, communities, and open spaces."

Thus, for the first time in American history, the federal government gave special cognizance to the technical and fiscal urban forestry needs of the nation's cities. (Urban renewal legislation of the 1960s provided funding only for landscaping around redevelopment sites.) As anticipated (but not yet funded), the United States Department of Agriculture was to provide general planning guidance

to state forestry professionals who, in turn, would counsel representatives of municipal governments on the assembly and feasibility of urban forestry management plans. Within the plans would be provisions to formulate tree protection ordinances (Andresen 1974).

Following the signing of P.L. 92-288, several House bills were introduced by congressmen to authorize the Secretary of Agriculture to provide cities with grants to pay up to 100% of the cost of trees and shrubs planted as part of city forestry programs. Additional grants would have paid 75% of the annual salaries of urban foresters in cities with populations exceeding 10,000.

In particular, representative Wendell Wyatt of Oregon introduced Bill H.R. 11253 in the first session of the ninety-third congress and representative John M. Swach of Minnesota introduced Bill H.R. 12383 in the second session. In both cases, the proposed act was to be cited as the *Urban Forestry Act*. Neither bill was approved but intent to make grants to cities and park districts to encourage the increased planting and care of trees and shrubs and to encourage other urban forestry programs was carried over into current (1976-1977) legislation. This new joint bill advocated by Senator Jacob Javits and Representatives Fred Richmond and Hamilton Fish, Jr., all of New York, if approved, would lead to an *Urban Trees Act* which would authorize an annual appropriation of $10 million to be matched by a similar amount by participating cities. The funds would be used primarily for tree planting and maintenance.

As the legal framework that supports the American environmental decade, the *National Environmental Policy Act* of 1970, similar state acts, and associated environmental impact assessment legislation play a significant role in the protection of trees and forests near urban centres or on more remote land used by urbanites for recreation. However, depending on whether priority is given to economic or to environmental considerations (Rosenbaum 1973) and depending also on the political climate (President Carter has promised environmental ascendancy), enforcement of regulations waxes and wanes.

Several other federal programs, through legislation and policy, influence the conservation of urban trees. To conclude this section we cite one more. In the late 1960s, the National Park Service of the United States Department of the Interior conceived a plan to develop a complex of 20 major federal urban parks to meet the outdoor recreation needs of the inner city ethnic population, urban and suburban commuters, and the out-of-state visitor. Since each of the proposed parks includes several thousand hectares of urban and near-urban land, the conservation impact upon urban greenspace could be of major significance. Aside from the preservation of native vegetation, better management of existing planted trees and gradual re-establishment of the indigenous flora, the park programs could provide an important stimulus to conservation integrity.

To date, two major urban recreation park systems have been created. Both were authorized by law (Public Laws 92-589 and 592) on 27 October, 1972, and are meeting the objectives of serving disadvantaged people, but are a continent apart in climatic and vegetation associations. The Golden Gate National Recreation Area of 13,600 ha centred near San Francisco contains Coast redwoods 90 m high, while the Gateway National Recreation Area of 8000 ha headquartered in New York City claims the ailanthus or tree-of-heaven as its symbol.

Both urban parks include refugia for native as well as exotic trees. More important, though, they offer a conservation ethic to a public long removed from a verdant environment.

4.2.2 State programs: In general, state statutes enable local municipal governments to compose and enforce their own ordinances (bylaws) but have a wider effect in the enforcement of statewide tree-related legislation. This is especially true with respect to the use and abuse of pesticides, conservation of natural areas, reclamation of near-urban wasteland through tree planting, and zoning to protect trees. Many states enforce certified tree-expert licencing laws as well as strict work standards for tree work.

State forestry or conservation divisions offer guidance to municipal officials to help them with urban tree management problems. As indicated earlier, a number of model tree or urban forestry ordinances are available from state officials. For example, the Kansas State Forester has prepared a sample tree ordinance for use by city council members, city managers and other officials concerned with street and park trees (Grey 1972). As an added incentive, only those Kansas municipalities that have passed a tree ordinance are eligible for free urban forestry management advice.

One of the more imaginative tree ordinance approaches is found in the Florida Division of Forestry (1973) *Urban Forestry Handbook*. Ten pages are devoted to a careful evaluation of tree protection ordinance principles with advice on preparation and enforcement. Another 12 pages describe and interpret the environmental laws of Florida. State foresters play an important role in Florida's local and regional planning as well as in urban forestry assistance. In this dual operation, they often assume para-legal capacity.

4.2.3 Local tree ordinances: In their legislative study, Gutman and Landry (1977) reviewed 99 selected tree planting, preservation and removal ordinances now in force in New Jersey. Although other authors (Barker 1975, Chadwick 1972, Rogers 1969) have written commentaries on local tree ordinances, the New Jersey study is the most objective and analytical. Gutman and Landry concentrated on an examination of the provisions and characteristics of five types of tree ordinances, paying special attention to the target population sector

(homeowners, contractors, civic officials, etc.). The types categorized were:

(1) tree removal ordinances

(2) site plan reviews

(3) subdivision ordinances

(4) open space zoning ordinances

(5) general zoning ordinances

Their compilation revealed that only 10 of the 99 ordinances reviewed were concerned with the preservation of existing trees: one subdivision, four site plans (reviews), and five open space ordinances. Much of the regulatory language in these ordinances was vague and open to various interpretations. Sixty-four ordinances were concerned with planting and removal regulations. The remainder were concerned with the recommended location of individual trees and woodlands.

One of the more significant conclusions of the Gutman and Landry study, and one that reinforces British and Canadian experience, was that tree ordinances are difficult to enforce because most municipalities do not have the funding to hire competent arborists or urban foresters to oversee planting, preservation and removal directives.

In other cities of the United States, depending upon the size of the city, and more important on the date of initiation, shade tree ordinances vary considerably in composition and length. Where cities rely upon relatively brief (1,000 to 1,500 words) ordinances, attendant regulations, permit enforcement, and programs of innovative city foresters compensate for lack of ordinance detail.

San Francisco, for example, with a tree, shrub and ground cover control ordinance of approximately 1,200 words, manages to encourage a high degree of civic pride in planting and maintaining trees on public property by private citizens.

Under subdivision (c) of section 4, San Francisco Ordinance No. 8993, series 1939, as amended 12 June, 1964 provides that:

> "It shall be the duty of the Department to encourage proper planting and maintenance of trees by private persons, and to advise private persons to plant according to the Official Street and Sidewalk Planting Program.

powers to assist the mayor, city council and director of public service (in lieu of a city forester). The Commission is directed to preserve, plant, plan, maintain and protect municipal trees or shrubs. General advice is also given to private property owners about tree care.

The foregoing sample of some of the better local tree ordinances provides several models for Canadian consideration. A more comprehensive survey of tree protection and preservation ordinances should be undertaken to delineate better the responsibilities of both municipal officials and private property owners.

4.2.4 International Society of Arboriculture Model Shade Tree Ordinance: In both its first edition entitled "A standard city ordinance, regulating the removal, planting and maintenance of shade trees in public areas, and standard arboricultural specifications and standards of practice", and the current "A standard municipal tree ordinance" (Neeley 1972), the International Society of Arboriculture (ISA) offered general tree ordinance preparation recommendations, a model standard municipal tree ordinance, a list of arboricultural specifications and standards of practice, and a suggested tree work permit form.

ISA strongly recommended that, through a comprehensive shade tree ordinance, a municipality should assume complete control over all public tree planting, maintenance and removal. Further, such functions should be performed with municipal crews and personnel, or by contracts with qualified, licenced, and insured private commercial arboricultural firms. In relation to the maintenance of trees within utility corridors, it recommended that:

> "All work on public trees by the utility companies should be under the direction and control of the municipal official in charge of the public trees through written specifications, permit and inspection."

Although the needs of municipally owned trees are served well by the recommendations in the second edition, the protection and preservation of privately owned urban trees and forests is lacking. This omission is reflected, in most instances, within local ordinances as an absence of reference to privately owned trees. Also there is reluctance on the part of most city councils to interfere with private property prerogatives even if the total community suffers through negligence and abasement of tree and forest resources. It is to be hoped that the third edition will incorporate suggestions for the better management of private tree assets through cooperative as well as legislative effort.

The foregoing review of British and American shade tree legislation provides a number of precedents and examples that will serve as an introduction to the following chapters on proposals for Ontario legislative reform and the preparation of model shade tree bylaws. Although the examples from Britain and the United States reflect indigenous needs and are themselves subject to change, we can profit from the trials and successes of legislation applied to trees grown under cultural conditions similar to those of Canada.

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1. P. 3.
2. P. 4.
3. The above quotations are all from [Hall] (1970).
4. Ibid.

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5. LIMITATIONS OF EXISTING ONTARIO LEGISLATION TO PROTECT TREES AND PROPOSALS FOR REFORM

5.1 The Municipal Act

The *Municipal Act* is designed to enable municipalities to carry out most of their functions. The act permits municipalities, among other things, to make such bylaws as are deemed expedient for the health, safety, morality and welfare of the inhabitants of the municipality.[1] This act, together with the *Public Parks Act*, provides the main authority for municipal urban forestry programs, particularly in parks and along roads, streets, and boulevards, collectively referred to as "highways" in the act.[2] The municipality's powers to pass bylaws to protect or preserve trees are discretionary rather than mandatory; that is, municipalities are not required to pass such bylaws. Many have not done so.

The central section of the act for urban forestry purposes is section 457, which makes the following provisions:

> "(1) In this section, "tree" includes a growing tree or shrub planted or left growing on either side of a highway for the purpose of shade or ornament.

APPENDIX 32.

Example of Recent Boulevard Tree
Bylaw from the City of Portland

CHAPTER 20.40

(New Chapter added by Ord. No. 134330 passed April 6, effective May 8, 1972).

STREET TREE REGULATIONS

Sections:

20.40.010 Definitions. As used in this chapter, singular includes the plural and vis. a vis.

(a) Tree shall include plants, shrubs, vines and ground covers.

(b) Street shall include sidewalk, malls, parking or planting strip, alley or any public area.

(c) Superintendent means superintendent of parks.

(d) Engineer means city engineer.

(e) City means city of Portland.

(f) Person includes any individual, firm, association, corporation, agency, or organization of any kind.

20.40.020 Street tree plan and list of trees.

(a) It is in the best interests of the city that a comprehensive plan be developed and established for the planting, maintenance and replacement of trees in and along its streets. This ordinance is adopted for the purpose of providing for such a plan and for the establishment of regualtions necessary to carry out its purpose.

(b) The superintendent may prepare or cause to be prepared a comprehensive plan for the planting and maintenance of trees in the streets of the city.

(c) The comprehensive plan shall include, but shall not be limited to, a series of maps of city streets upon which is designated a scheme for the planting of trees and the zoning of streets for certain types of trees. Such maps shall show the interval between trees and the place where each tree is to be planted.

(d) A survey of the street trees presently existing in the city and their condition may be taken.

(e) The superintendent shall maintain a list of approved varieties of trees and ground covers that may be planted on any street within the city in accordance with the Street Tree Plan. Approval shall be based upon considerations such as maturity, height, susceptibility to disease or pests, reasonable freedom from nuisance characteristics and general suitability for any particular locations. The superintendent's listing of approved varieties shall not prevent the seeking of approval of unlisted varieties.

(f) It shall be unlawful for any person to engage in the business occupation or profession of tree trimming within the corporate limits of the city of Portland without first obtaining a license therefor as provided in Chapter 7.150 of the code.

20.40.030 Jurisdiction of street trees. The superintendent shall have jurisdiction over all trees, planted or growing within or upon the streets, and the planting, removal, care, pruning, maintenance and protection thereof, and may call upon the Bureau of Nuisance Abatement and the city engineer as may be necessary for enforcement of this chapter.

20.40.040 Planting.

(a) The superintendent may plant trees in the streets of the city in accordance with the Street Tree Plan. In addditon to using his own personnel, he may hire independent contractors.

(b) It shall be unlawful for any person to plant or set out any tree or authorize or cause or procure any person to plant or set out any tree in or upon any part of any street without first obtaining from the superintendent a written permit so to do and complying in all respects with the conditions set forth in such written permit and with the provisions of this chapter. All applications for such permit shall describe work to be done and the variety, size and precise location of each tree to be planted. If the superintendent has found that the proposed planting is in accord with the Street Tree Plan; or that trees proposed to be planted have a resaonable likelihood of prospering and such permit specifies the location, variety and grade of each tree and method of planting, including among other things the supplying of suitable soil, then he may grant a permit. The permit shall be good only for the planting season stated.

20.40.050 Maintenance.

(a) The superintendent may prune and maintain or cause to be pruned and maintained all of the trees in the streets.

(b) Responsibility for trimming of trees, standing in or upon any street or private grounds and having branches projecting into the street, shall be trimmed by the owners of the property adjacent to or in front of which such trees are growing and shall be done according to the requirements for tree branch clearance over street and sidewalk areas and signs as set forth in Title 16 and 17 of the code of the city of Portland.

(c) Whenever the owner or owners, lessees, occupants or persons in charge of private grounds shall neglect or refuse to trim any tree as provided in this section, the superintendent may trim or treat or cause to be trimmed or treated such tree. The person remedying the condition shall be authorized to enter the premises for that purpose.

(d) Trimming for or by Public Utility. Upon obtaining a written permit from the superintendent, a public utility maintaining its utility system in a street may trim or cause to be trimmed, in accordance with said permit, any tree located in the street which interferes with any light, pole, wire, cable, appliance or apparatus used in connection with or as a part of the utility system; but no tree shall be trimmed without the consent of the abutting owner until the public utility shall have given a written or printed notice to the owner or occupant of the premises. The owner or occupant has one month after receipt of notice to trim or arrange for trimming of said tree at this cost and in accordance with the terms of the permit. If the owner or occupant fails, neglects or refuses to trim such tree as required by the notice and permit, the public utility may trim, or cause to be trimmed, the tree at its expense in accordance with the conditions of the permit.

20.40.060 Removal.

(a) Diseased trees. When any tree located on a street or on private property is infested with a disease of insects, or is in the opinion of the superintendent, infectious and may spread such disease or insects to other trees in the city, the superintendent may remove or treat the tree or cause same to be removed or treated.

(b) Regulations regarding root interference with sewers and damage to curbs and sidewalks are set forth in Title 17, Public Improvements, of the code of the city of Portland.

(c) The superintendent may abate or remove or cause to be abated or removed any tree located in the street area or which encroaches from private property into the street area because of age, disease or other debilitating cause, death, insecure root system, or any toher condition which, in the opinion of the superintendent, causes its continued existence to be detrimental to the public interest. The superintendent may require that the removed tree be replaced with a new tree at the expense of the property owner.

(d) It shall be unlawful for any person, without a prior written permit from the superintendent, to remove, destroy, cut, break or injure any tree, or to remove, except as provided in this chapter, any tree that is planted or growing in or upon any street or cause or authorize or procure any person to do so; or injure, misuse or remove any device set for the protection of any tree in or upon any street.

(e) The approval of a tree removal by the superintendent may be conditioned on replacement with a new tree of approved variety if the superintendent finds the replacement necessary to maintain an ornamental tree system on the street, block or portion thereof. If approval by the superintendent is so conditioned, the tree removal permit shall contain such condition. Costs of replacement are the responsibility of the property owner.

20.40.070 Permit requirements and conditions. Any person desiring for any purpose to plant, remove, destroy, cut,prune, or treat any tree in or upon any street shall make application to the superintendent on forms furnished by the city. Such application must state the number and kind of tree to be planted, removed, trimmed, pruned or treated, the name of permittee and/or contractor, and the time by which the proposed work is to be done and such other information as may be required by the superintendent. Any work done under such written permit must be performed in strict accordance with the terms and the provisions of this chapter. In issuing or denying a permit, the superintendent shall apply all the standards as set forth in this chapter and the objectives of the Street Tree Plan.

(a) Appeal. If the superintendent refuses to issue any permit as required by this chapter, he shall at once so notify the applicant who may appeal to the council in writing within 10 days thereafter. The council shall proceed to hear and determine the appeal, calling upon the superintendent to give his reasons therefor. In all cases decision of the council shall be final.

(b) Owner's exception for pruning, trimming and treating of trees. If the actual labor in pruning, trimming or treating a tree is performed by an owner, occupant or agent or a lessee, than a permit for such pruning, trimming or treating will not be required.

(c) Emergency. In case of emergency caused by a tree being in a hazardous or dangerous condition, such tree may be removed by permission of any member of the police or fire department.

20.40.080 Cutting, trimming and pruning. The following regulations are hereby established for the trimming and care of trees in or upon the public streets of the city:

(a) When trees are cut down, the stump thereof shall be removed to a depth of six inches below the surface of the ground or grade of the street, whichever is of greater depth.

(b) When pruning, all cuts must be flush cut and those of more than two inches in diameter must be waterproofed in accordance with the condition of the permit.

20.40.090 New subdivision. The superintendent shall require the planting of street trees within the planting strips of any new subdivision in conformity with a Street Tree Plan for the area which, in turn, shall be in conformity with the Street Tree Plan. All such planting shall be done in accordance with the planting specifications governing the planting of trees in planting strips as provided by the superintendent.

20.40.100 New streets. Any proposed change in width in a public street right-of-way or any proposed street imporvement may, where feasible, include allowances for planting strips. Plans and specifications for planting such areas shall be integrated into the general plan of improvements, and it shall be the duty of the City Engineer to coordinate the design of such improvements with the park and planning bureaus prior to completion of final overall plans.

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20.40.110 Protection.

(a) It shall be unlawful for any person to attach or keep attached to any tree in or upon any public street or to the guard or stake intended for the protection of such tree any ropes, wires, chains, or other device whatsoever, except that the same may be attached to any tree as support or protection thereof.

(b) During the erection, repair, alteration or removal of any buildings of structure, it shall be unlawful for the person in charge of such erection, repair, alteration or removal to leave any tree in or upon any street in the vicinity of such building or structure without a good and sufficient guard or protector as shall prevent injury to such tree arising out of or by reason of such erection, repair, alteration or removal.

20.40.120 Gifts and funding - liabilities and responsibility for costs.

(a) The city may accept gifts which are specifically designated for the purpose of planting or maintaining street trees within said city.

(b) Funds raised by a local improvement district as provided in Section 9-703 of the charter of the city shall be expended by the superintendent or under his direction and supervision for the planting and maintenance of street trees.

(c) The superintendent may direct any adjacent property owner to plant, trim, prune, treat or maintain or remove street trees adjacent to this property or after notice to said property owner, the superintendent may perform the work necessary or have the same performed and assess said adjacent property for the cost.

Nothing in this ordinance shall be deemed to impose any liability upon any member of the city council or the city, or any of its officers or employees nor to relieve the owner or occupant of any private property from the duty to keep his private property, sidewalks, planting strip and street trees in front of such private property in a safe condition so as not to be hazardous to public travel nor to relieve said property owner of the obligation to pay the cost of planting, removal and replanting of street trees in the planting strip adjacent to the property of said property owner.

20.40.130 Historic trees. The superintendent shall as soon as possible after passage of this chapter and from time to time thereafter prepare or cause to be prepared a list of trees within the city which because of their age, type or historic association are of special note. Such trees, upon approval of the city council, will be designated "Historic Trees."

Upon a tree being designated as a historic tree, a plaque so designating shall be placed upon or near said tree. It shall become the obligation of the bureau of parks to maintain it, and if such tree is upon private property, the superintendent shall notify the owner of such tree that it has been designated as a historic tree and may thereafter be maintained by the bureau of parks upon consent of the property owner.

A historic tree may not be removed without a public hearing at least 30 days prior to the proposed date of removal.

This chapter is intended to give, and does hereby give full and complete authority to the superintendent over any and all historic trees in the city.

20.40.140 Peanlty. Any person, firm or corporation violating any provision of this chapter shall, upon conviction, be fined a sum not exceeding $500 or be imprisoned in the city jail for a period not exceeding six months, or be punished by both such fine and imprisonment.

20.40.150 Nuisances--abatement procedure. In addition to the procedures for enforcement set forth within this chapter, the superintendent in enforcing the provisions of this chapter may proceed against the property on which front of which a tree is located and found to constitute a nuisance as set forth under Chapter 14.16, Nuisance--Abatement Procedures of the code of the city of Portland.

7

An Ordinance amending Chapter 14.16050 of Title 14 (Public Peace, Safety and Morals) of the Code of the City of Portland, by changing the allowed height of trees over sidewalks to seven and one-half feet, and declaring an emergency.

The City of Portland ordains:

Section 1. The Council finds that Section 14.16.050 (Weeds & Debris) currently requires that tree limbs which extend over the sidewalk may not be less than nine feet above the sidewalk, that it has been recommended by the Coordinator of the Bureau of Neighborhood Environment after consultation with the Office of City Engineer and the Bureau of Parks and approved by the commissioner in charge thereof that said section be amended so as to reduce the minimum height requirement for tree limbs extending over sidewalks from nine feet to seven and one-half feet, that a minimum height requirement of seven and one-half feet will not impair pedestrian movement on the sidewalks, will not restirct the view of motorists traveling on adjacent streets, nor impair work which must be carried on in the sidewalk area, that the recommendation to Section 14.16.050 by reducing the minimum height requirement for tree limbs over sidewalks form nine to seven and one-half feet should be granted.

NOW THEREFORE, Section 14.16.050 of Chapter 14.16 (Weeds & Debris) of Title 14 (Public Peace, Safety and Morals) of the Code of the City of Portland, Oregon, is hereby amended and shall hereafter read as follows:

Limbs of trees may be allowed to project over the sidewalk area at an elevation of not less than seven and one-half feet above the sidewalk level, and over the street area at an elevation of not less than 11 feet above the street level. However, on any street designated as an arterial or one-way street, and where parking has been prohibited, limbs of trees shall be trimmed to a height of not less than 14 feet above the street level. No wires or other things shall be maintained over the street level at any elevation less than 11 feet. However, on any street designated as an arterial or one-way street, and where parking has been prohibited, no wires or other things shall be maintained over the street level at an elevation of less that 14 feet.

Passed by Council August 15, 1974

STATE OF OREGON
DEPARTMENT OF AGRICULTURE
Plant Division
Salem, Oregon

NOTICE OF QUARANTINE AMENDMENT
RELATING TO DUTCH ELM DISEASE AND PHLOEM NECROSIS VIRUS

In accordance with ORS 561.530(4) and 561.585, the following notice is hereby rendered. An order amending the existing quarantine against Dutch Elm Disease and Phloem Necrosis Virus is entered so as to include within the areas under quarantine the areas of Clackamas, Multnomah and Washington Counties situated within the established geographic limits of the City of Portland. Thus, any of the trees, plants or other specified commodities situated in the described areas of these counties are prohibited movement in or outside of said areas except for departmentally authorized movement for disposal. The amended Order of Quarantine shall continue in effect unless removed in accordance with the provisions of ORS 561.550.

Dated this 25th day of October, 1977.

Leonard Kunzman
Leonard Kunzman, Director

dc3/6

I HEREBY CERTIFY THAT THE FOREGOING COPY IS A FULL, TRUE AND CORRECT COPY OF THE ORIGINAL.

Harold E. Burke
Assistant Attorney General, Assigned to State Department of Agriculture, Salem, Oregon

APPENDIX 33.

Proposed Act and Regulations
respecting Qualifications and
Licensing of Arborists in
Ontario

APPENDIX 33.

Proposed Act and Regulations
respecting Qualifications and
Licensing of Arborists in
Ontario

Preamble to Reg?

A Proposed Regulation Respecting
the Qualifications and Licensing of
Arborists

Table of Contents

the Qualifications and Licensing of
Arborists

Section 1. IN THIS REGULATION

- "Person" means an individual, partnership or any group of persons, whether incorporated or not;

- "Arborist" means a person who, for profit, diagnoses or evaluates the condition of shade, ornamental, road side trees or those designed to become such, or recommends or supervises the treatment of such trees, or in any manner treats or removes such trees or parts thereof, or protects or attempts to protect such trees from any agent of disease, injury or insect damage by chemical, mechanical or any other method;

Change

"Shade trees" means trees grown, established or used to screen persons, grounds, structures, walks, pools, industrial apparatus, etc. from observation and/or direct sunlight;

- "Ornamental trees" means trees of shade, beauty or landscape value;

- "Board" means the Arborist Examining Board provided for in this act.

(b) One of two types of licenses shall be issued, namely REGULAR and RESTRICTED. Regular licenses will allow a licensed individual to engage in all operations in which an arborist is normally involved. Restricted licenses will allow such a licensed individual to perform only those operations which his license specifically states. Restriction will be at the discretion of the Arborist Examining Board and may be based on degree of technical competence or possession of licensing under other pertinent legislation including the Pesticides Act or both.

Section 4. EXEMPTIONS

(a) Any person in respect to trees on his own premises;

(b) Any individual performing labour or services on or in connection with trees at the direction and under the personal supervision of a licensed arborist while in the performance of such functions, provided that employed personnel with supervisory responsibility are required to qualify for and hold a license.

(c) Employees of public utilities, parks departments, governmental vegetation management agencies and the like when working under the direction of a company repre-

sentative trained in the knowledge of woody plants; such training shall consist of

(i) A minimum of four years professional studies and a Bachelor's Degree in the field for which specialization is recognized.

(ii) A technical diploma in arboriculture, gained through three years concentrated study at a recognized college or school of horticulture.

(iii) Completion of a recognized arboricultural training programme including those aspects of arboriculture in which work is being done. Such training shall consist of no less than four years total work experience and no less than eight weeks of lectures, seminars, labs, etc. in a normal classroom setting.

(d) Scientific specialists such as plant pathologists, entomologists, botanists, foresters, horticulturists and others who are not arborists but who, by academic training are professionally qualified, provided that any services performed for a fee are limited to the specific area of professional qualification and that all other activities of practicing arborists are prohibited to them without examination.

sentative trained in the knowledge of woody plants; such training shall consist of

(i) A minimum of four years professional studies and a Bachelor's Degree in the field for which specialization is recognized.

(ii) A technical diploma in arboriculture, gained through three years concentrated study at a recognized college or school of horticulture.

(iii) Completion of a recognized arboricultural training programme including those aspects of arboriculture in which work is being done. Such training shall consist of no less than four years total work experience and no less than eight weeks of lectures, seminars, labs, etc. in a normal classroom setting.

(d) Scientific specialists such as plant pathologists, entomologists, botanists, foresters, horticulturists and others who are not arborists but who, by academic training are professionally qualified, provided that any services performed for a fee are limited to the specific area of professional qualification and that all other activities of practicing arborists are prohibited to them without examination.

(e) Other specialists such as nurserymen, landscape architects and other persons professionally trained or experienced in the knowledge of woody plants, provided further that services performed for compensation are limited to activities in the area in which they are qualified.

(f) This Act shall apply to any specialist whose activities are carried beyond his special knowledge, training and ability.

Section 5. LICENSE REQUIREMENTS

A license shall be issued only if the applicant:

(a) Is at least 18 years of age, is a citizen of Canada, or has taken initial steps toward naturalization, is of good reputation of honesty, has knowledge and qualifications required by this Act and passes a written and/or oral examination;

(b) Furnishes an acceptable surety bond executed by the applicant as principal, and by a solvent surety authorized to do business in the Province of Ontario as surety, in the sum of five thousand dollars ($5000) for each place of business to be maintained in the Province of Ontario, by the applicant;

(c) The condition of said bond shall be, that the principal therein shall conduct said business and professional service in conformity with the Arborist Code of the International Shade Tree Conference - Canada, and with the rules and regulations authorized under this Act;

(d) A copy of said bond shall be furnished by the Surety Company, duly certified by the Director of the Department and shall be received as evidence in all courts of this province without further proof.

Section 6. APPLICATIONS

(a) Applications for original licenses shall be in writing, on forms prescribed by the Arborist Examining Board and shall be accomplished by an application fee of $12.00 in the form of money order or certified cheque and shall not be returnable.

The application form shall require whatever information the Board feels necessary to judge qualifications of the applicant. It shall include but need not be limited to information concerning age, citizenship, education, physical condition, present and previous residences and business connections, financial and professional references and information in respect to insurance, bondedness and the Workmen's Compensation Act.

Section 7. EXAMINATION TYPES

(a) Written examination shall be required of all applicants who have not been actually engaged in the occupation of an arborist for the period of five consecutive years immediately prior to a specified date following passage of this Act, or of applicants whose knowledge or ability is in doubt in the opinion of the Examining Board.

(b) After one year following the enactment of this law, a written and/or oral examination and a minimum of six months work experience with a licensed arborist shall be required of all applicants.

(c) Oral examinations shall be required of all applicants who may be waived written examination on the basis of experience as indicated in this Act, or of applicants whose knowledge or ability is in doubt. An applicant for whom written examination is waived shall furnish the Board with sworn affidavits of experience as an arborist, but shall be required to pass an oral examination.

(d) Both written and oral examinations may be required of an applicant to enable the Board to judge his qualifications.

(e) Applicants for restricted licenses shall be examined only in those areas to which their activities are restricted.

roots, bark, wood, flowers, fruits, buds, seeds, sap, and explain how the tree would be affected with disease, or detruction of each part;

5. Recognize symptoms of diseases, injuries, weaknesses, abnormalities and other condition adverse to health of trees;

6. Recognize the causes of disease or injury and signs or symptoms of causes of diseases to trees, such as insects, animals, humans, fungi, bacteria, viruses, nematodes, mineral deficiencies, water deficiencies, chemicals, wind, frost, ice, snow, lightning, gas fumes, construction, paving, soil cuts, fills, parasitic plants, constricting plants, wire, string or rope, sunscald, excessive heat, inadequate soil or space, etc.;

7. Describe the relative susceptibility of common trees to common causes of disease or injury;

8. Describe accepted methods of pruning, bracing, cabling, cavity treatment, canker removal, treatment of girdling roots, treatment of wounds, felling, removal and disposa of trees and stumps;

9. Discuss the basic chemical elements essential to tree growth, where they are found, how they enter the tree and which ones are likely to be deficient;

10. Describe conditions when fertilizers are required for trees, the manner in which they are applied and the significance of fertilizer formulae;

11. Describe the use and significance of 2,4-D, 2,4,5-T and other weed and brush-killers in working with woody or broadleaved plants;

12. Describe the use and type of chemicals needed to control common tree insects and diseases without injuring trees or workers;

13. Describe the equipment used in application of insecticides, nematicides, fungicides and herbicides, including methods of operation and safety precautions for machines, trees and operator;

14. Describe the significance of tree insects and tree disease to one another in trees growing under unnatural or unfavorable conditions in widespread plantings of single species, as in many urban areas;

15. Describe the proper methods for planting or transplanting trees, include precautions to avoid drying and inadequate root development, as well as for care and treatment following planting;

16. Discuss the concept of toxicity of pesticides to animals and humans, as well as to pests, explain how and under what conditions chemical sprays can be justified and used without hazard to health of humans or serious menace to animal life, describe relative toxicity, residual properties, chemical make-up, etc. of common pesticides and safety measures used to counteract toxicity to humans;

17. Describe the responsibilities of an ethical arborist in adhering to standards and values in serving the public.

(b) Each applicant for a RESTRICTED LICENSE shall be examined only in those areas of skill and knowledge related to the arboricultural activities for which he requires licensing. These shall be outlined as follows:

1. Tree pruning, planting and removal

2. Fertilizing and Disease and Insect Control of Trees and Shrubs

3. Tree Cabling, Bracing and Cavity Repair

4. Landscape Development and Maintenance

5. Turf Development and Maintenance.

Examination shall be on subject material contained in the Basic Modules of the Arborist Journeyman Extension Training Program, consisting of the following:

Module 1. Basic Botany and Plant Identification
2. Power Tool and Equipment Theory and Maintenance
3. Rigging, Climbing and Hand Tools
4. Pruning, Limb Removal and Tree Felling
5. Planting, Fertilizing and Soils
6. Insect Recognition and Control
7. Disease Recognition and Control
8. First Aid
9. Basic Business
10. Vegetation Control
11. Landscape Development and Maintenance
12. Turf Development and Maintenance

(c) The questions asked on such examinations and the grading and passing of applicants shall be exclusively the responsibility of the Examination Board.

(d) Both successful and failing applicants shall be informed in writing of those areas in which training and/or knowledge is or appears to be deficient. Applicants failing examination may apply and take another examination within six to twelve months following an original examination.

Section 9. LICENSE TERM

(a) Each license shall be issued for the term of one calendar year, or for such part of a year remaining before December 31. Each license shall be renewed during the month of December of each year and shall expire at the end of December of the year which issued. An arborist whose license has expired may within a year after the expiration, obtain a renewal license by making a renewal application and by paying a renewal license fee to cover the period since the expiration of his license.

(b) However, any arborist whose license expired while he was in federal service on active duty with the Armed Forces of Canada, may have his license renewed without paying any intervening renewal license fees if, within one year after termination of such service, other than by dishonorable discharge, he furnishes the Department with an affidavit to the effect that he has been so engaged and thus his service, has been so terminated.

Section 10. LICENSE RENEWAL

(a) Applications for renewal licenses shall be on forms prescribed by the Department and shall contain whatever information is necessary for the Board to determine whether the applicant should continue to hold a license, and shall be accompanied by the required fee, which shall be returnable if the applicant is denied a license renewal. Lost licenses shall be replaced on application by the licensed arborist and payment of $1.00.

Section 11. LICENSE FORMS

(a) Each license issued shall consist of two parts:

1. a certificate which must be displayed at each place of business of the arborist;

2. a card of wallet size which must be carried by the arborist when occupied in a business capacity. License cards shall be subject to display on request of client by whom an arborist's services have been retained, any duly authorized law enforcement officer, member of the Arborist Examining Board, or representative of the Department to which jurisdiction of the Act is assigned.

(b) Where the arborist conducts business at more than one address, additional certificates shall be issued on payment of the required fee. When an employee of a licensed arborists does not himself hold a license, he shall have with him when working, a signed card or authorization on a form prescribed by the Department by that licensed arborist showing under whose supervision he is working and by whom he is employed. The Director shall not issue more than one license card to an individual qualified to receive a license.

Section 12. NON-RESIDENT APPLICATION

(a) Each non-resident applicant (a resident of a different province) for an original license or a renewal license shall file an irrevocable consent that actions against him may be filed in any appropriate court of any county or municipality where some part of the transaction occurred out of which the alleged cause of action arose, and that process in any action may be served on the applicant by leaving two copies thereof with the Director of the Department. Such consent shall stipulate and agree that such service of process shall be taken and held to be valid and binding for all purposes. The Director shall send one copy of such process to the applicant at the address shown on the records of the Department by registered mail.

Section 13. RECIPROCITY

(a) In the event that a non-resident holds a valid arborist license from another province, he may on application for a license, be waived examination by the Board, provided that the other province in which he holds such license requires qualification and examination as indicated in this Act. If said other province law partially meets the standards of this Act, the Board will decide in what respect it is lacking and what requirements the applicant must meet for waiver of examination, or whether written examination shall be waived.

Section 14. DENIAL OF LICENSE

(a) The Department may refuse to issue or renew or may suspend or revoke a license on any one or more of the following grounds, provided that charges brought on any one of these grounds must be proven:

1. Deliberate misstatement in the application for original license or in the application for any renewal license under this Act;

2. Wilful disregard or violation of this Act or of any regulation or rule issued pursuant thereto;

3. Wilfully aiding or abetting another in the violation of this Act or of any regulation or rule issued pursuant thereto;

4. Allowing one's license under this Act to be used by an unlicensed person;

5. Conviction of any crime, an essential element of which is misstatement, fraud, dishonesty or conviction of any felony;

6. Wilful and knowledgeable disregard or violation of any substantial provision of any safety, labor or compensation law, ordinance or regulation of the Dominion of Canada, this province, municipality or other governmental unit;

7. Making substantial misrepresentation or false promises of a character likely to influence, persuade or induce in connection with the business of an arborist;

8. Pursuing a continued course of misrepresentation or of making false promises through advertising, salesmen, agents or otherwise in connection with the business of an arborist;

9. Failure to possess the necessary qualifications or to meet the requirements of the Act;

10. Failure to meet the surety bond requirement as indicated in this Act;

11. Failure to remove one or more deficiencies cited in examination within a reasonable time to be determined by the Board.

Section 15. EXAMINING BOARD

(a) Only those duties and functions of the Department and Director as indicated under this Act shall be exercised without written authorization of the Arborist Examining Board. All decisions of policy not otherwise specified shall be at the discretion of the Board.

(b) Such Board shall be composed of six individuals appointed by the Minister not more than two of whom shall be commercial arborists, each of whom shall have been so engaged continuously for a period of 10 years prior to his appointment and shall be qualified for a license, two of whom shall be either a horticulturist, a plant pathologist or an entomologist, at least part of whose work is concerned with trees; and two of whom shall be representative of a utility

or municipal forestry or park department, provided that each of these specialists be qualified by credentials as indicated under this Act.

(c) The two original members who are commercial arborists shall serve for three and six years respectively; the two original members who are plant pathologists, entomologists or horticulturists shall serve three and six years respectively and the two original members who are members of a municipal forestry, parks or utility organization shall serve three and six years respectively.

Each succeeding member of the Board shall serve for a term of six years. The term of each member shall commence on the first Monday in October of the year in which such member is appointed. Each original member shall be licensed under this Act provided that he is qualified by requirements of this Act if a commercial arborist, and by academic training if a pathologist, entomologist, horticulturist or a forestry or park representative professionally trained in knowledge of woody plants, except that he need not take either examination required. Each successive member of such Board who is a commercial arborist shall receive a license if he meets the requirements of Section 5 (a) of this Act. Each successive commercial arborist member shall have been previously licensed under this Act. Board members defined by this Act as specialists need no license but must be certified for academic training.

(d) Commercial arborists who are appointed to be, are or have been members of the Arborist Examining Board shall be prohibited from using this position in the advertising of their business in any way.

(e) The action or report in writing of a majority of the Board shall be sufficient authority on which the Department or the Director may act and neither the Director nor the Department shall act without authorization in writing of a majority of the Board except as indicated in this Act. Whenever the Director is satisfied that justice has not been done in any matter, he may order a reconsideration of such matter by the Board and may require a hearing with testimony from conflicting parties presented, but a final decision forthcoming from this reconsideration (or rehearing) shall be by majority of the Board.

(f) The Board shall meet at least four times per year, and in addition as often as a majority of its members deem necessary. It shall be authorized to conduct business when possible by correspondence or telephone, provided that all decisions or votes by individual members be confirmed in writing over the signatures of each member. Board members not of government agencies shall be paid daily

fees of $50 per day involved, plus mileage and other expenses. Members of government agencies shall be paid expenses not covered by agencies in which employed.

Section 16. RESPONSIBILITIES OF BOARD, DEPARTMENT, DIRECTOR

(a) The Director of the Department shall compile and maintain a complete and up-to-date list of all licensed arborists in the province. Such a list shall be published once per year and shall be made available to any person on request.

(b) The Department may, upon its own motion, and shall, upon a notarized affidavit in writing from any person setting forth facts which if proved would constitute grounds for refusal, suspension or revocation of a license under this Act, investigate the actions of any applicant or any person or persons holding or claiming to hold a license. The Department shall, before refusing to issue or renew, and before suspension or revocation of a license, at least ten days prior to the date set for the hearing, notify in writing the applicant for or holder of a license, called the respondent, that a hearing will be held on the date and at the place designated to determine whether the respondent is privileged to hold such license, and shall afford the respondent an opportunity to be heard in person or by counsel.

Such written notice may be served by delivery of the same personally to the respondent, or by mailing the same by registered or certified mail to the place of business last specified by the respondent in the last notification to the Department. At the time and place fixed in the notice, the Board shall proceed to hear the charges and both the respondent and the complainant shall have opportunity to present in person or by counsel such statements, testimony, evidence and argument pertinent to the charges or to any defense. The Board may continue such hearing from time to time. If the Board shall not be sitting at the time and place fixed in the notice or at the time and place to which the hearing shall have been continued, the Director shall continue such hearing for a period not to exceed 30 days.

(c) The Department, over the signature of the Director, is authorized to subpoena and bring before the Board any person or persons in this province, and to take testimony either orally or by deposition or by exhibit, with the same fees and mileage and in the same manner as prescribed by law in judical procedure in civil cases in courts of this province.

Such written notice may be served by delivery of the same personally to the respondent, or by mailing the same by registered or certified mail to the place of business last specified by the respondent in the last notification to the Department. At the time and place fixed in the notice, the Board shall proceed to hear the charges and both the respondent and the complainant shall have opportunity to present in person or by counsel such statements, testimony, evidence and argument pertinent to the charges or to any defense. The Board may continue such hearing from time to time. If the Board shall not be sitting at the time and place fixed in the notice or at the time and place to which the hearing shall have been continued, the Director shall continue such hearing for a period not to exceed 30 days.

(c) The Department, over the signature of the Director, is authorized to subpoena and bring before the Board any person or persons in this province, and to take testimony either orally or by deposition or by exhibit, with the same fees and mileage and in the same manner as prescribed by law in judical procedure in civil cases in courts of this province.

Section 17. HEARING PROCEDURE

(a) The Department, at its expense, shall provide a stenographer to record and preserve the testimony of all proceedings at the hearing of any case involving the refusal to issue or renew, or the suspension or revocation of a license. The notice of hearing, the original complaint in writing motions filed in the proceedings, the transcript of testimony, the report of the Board and orders of the Department shall be the record of such proceedings.

(b) In any case involving the refusal to issue or renew, or the suspension or revocation of a license, a copy of the Board's report shall be served upon the respondent by the Department, either personally or be registered or certified mail as provided in the Act. Within 20 days after such service, the respondent may present to the Department a motion in writing for a rehearing, which written motion shall specify particular grounds. If no motion for rehearing is filed, then upon the expiration of the time specified for filing such a motion, or if a motion of rehearing is denied, then upon such denial, the Director may enter an order in accordance with recommendations of the Board.

Section 18. COURT ORDER

(a) Anyone may, upon application of the Director or of the applicant or licensee against whom proceedings under Section 15 of this Act are pending, enter an order requiring the attendance of witnesses and their testimony, and the production of documents, papers, files, books and records in connection with any hearing in any proceedings under that section. The court or judge may compel obedience to its or his order by proceedings for contempt.

Section 19. JUDICIAL REVIEW

(a) Any person affected by a final administrative decision of the Department may have such decision reviewed judicially by the circuit or superior court of the county wherein such person resides, or in the case of a corporation, wherein the registered office is located.

(b) The Department shall certify the record of the proceedings following a judicial decision.

Section 20. LICENSE SURRENDER

(a) Upon the revocation or suspension of any license, the licensee shall forthwith surrender license credentials

including all cards, certificates, and branch office licenses to the Department, and if the licensee fails to do so, the Department shall have the right to seize the same through a court order. In such an event the licensee shall pay court costs in compliance, and if still defiant, shall be held in contempt and fined according to civil law.

Section 21. REGULATIONS AUTHORIZED

(a) The Director, with the approval of the Board, may issue regulations consistent with the provisions of this Act for its administration and enforcement, and may prescribe forms which shall be used in connection therewith.

Section 22. DISCLAIMER CLAUSE

(a) No action or counterclaim shall be maintained by any person in any court in this province with respect to any agreement, work, labor or materials for which a license is required by this Act or to recover the agreed price or any compensation under any such agreement or for any such work, labor or materials for which a license is required by this Act, without alleging and

proving that such person had, should have had or claimed to have had a valid license at the time of making such agreement and of supplying such labor, work or materials.

Section 23. PENALTIES

(a) If any person violates the provisions of this Act, the Director may, in the name of the People of the province, apply, in any court of competent jurisdiction, for an order enjoining such violation or for an order enforcing compliance with this Act. Upon filing a verified petition in such court, the court or any judge, if satisfied by affidavit that such person has violated this Act (may issue a temporary injunction without notice or bond, enjoying such civil cases. If it is established that such person has violated or is violating this Act, the court or any judge may enter a decree perpetually enjoining such violation or enforcing compliance with this Act. In case of violation of any order or decree issued under the provisions of this section, the court or any judge may summarily try and punish the offender for contempt of court. Proceedings under this section shall be in addition to, and not in lieu of all other remedies and penalties provided by this Act.

Section 24. ENFORCEMENT

(a) Any person violating the provisions of this Act shall be punished by a fine of not more than $200 or imprisonment for not more than 2 months, or both.

Section 25. FEES

(a) A $12 application fee shall accompany each application for license and shall not be returnable. When an applicant is notified that he is eligible for a license following examination, he shall remit an additional ten dollars ($10) before a license is issued. The following fees shall be charged:

1. for an original license to an individual (minimum).....$22.00

2. for an annual renewal license (minimum).....$ 5.00

(b) Fees collected under this or any other section shall be used by the Department to supplement appropriated funds to cover departmental and board activities, fees and mileage of persons subpoenaed.

Section 26. SAFETY CLAUSE

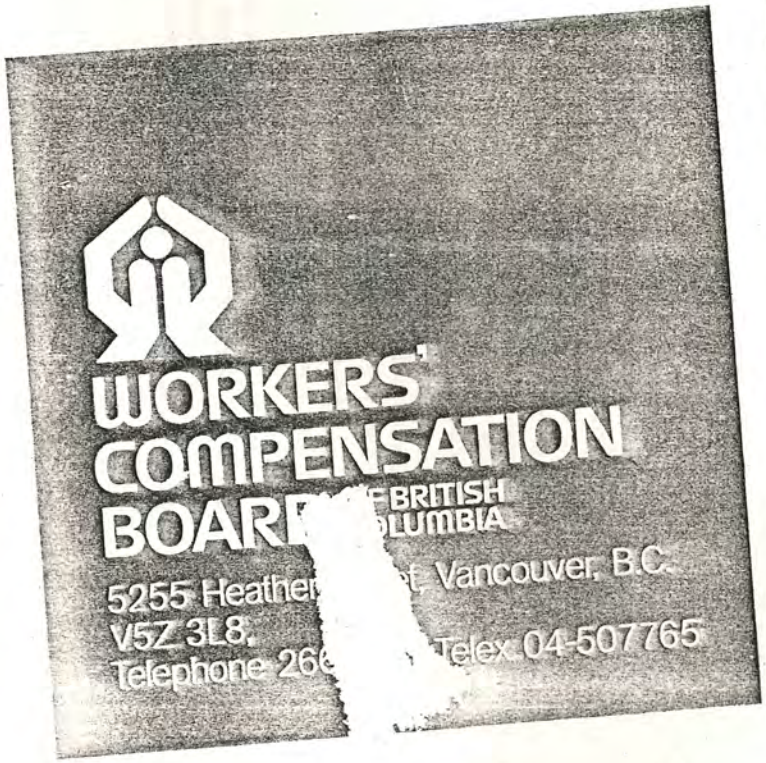
(a) If any clause, sentence, paragraph, section or part of this Act shall for any reason be declared unconstitutional by any court of competent jurisdiction, or repealed or modified by legislative action, it shall not affect the validity or constitutionality of any remaining sentence, clause, paragraph, section or part of this Act, unless specifically stated. In any event the members of the Board shall be held harmless for misinterpretations or unconstitutional provisions, provided that they do not rule deliberately in the knowledge or error.

APPENDIX 34.

Industrial Health and Safety
Regulations for Tree Work,
Workers' Compensation Board
of British Columbia

24-4
24-5
A 34

Industrial Health & Safety Regulations



ASSURANCE IN WRITING

Assurance of safe conditions

24.04. (1) When the minimum distance specified in regulation 24.02 cannot be maintained because of the circumstances of work or inadvertent movement of persons or equipment, an assurance in writing, signed by the person or persons controlling the electrical system shall be obtained before any work commences in proximity to energized conductors.* This assurance shall state that, during the time the work is to be carried on, the electrical conductors will be:

(a) de-energized, or

(b) effectively guarded against contact, or

(c) displaced or re-routed from the work area.

*W.C.B. Form 30M33 is available for this purpose.

Precautions

(2) (a) Unqualified persons shall not touch or handle electrical guarding. Equipment shall not be intentionally allowed to contact such guarding.*

*Guarding will not completely eliminate the danger of electrical shock if contact is made.

Safety watcher

(b) A safety watcher shall be posted to observe and control the approach of equipment and loads and to stop immediately any encroachment on the minimum distance specified in regulation 24.02 whenever guarding is used as a means of protection.

Availability of written assurance

(3) The written assurance shall be available for inspection at the work project, and shall be made known to all persons who may be permitted access to the area within which equipment or materials are to be moved or stored.

ENERGIZED CONDUCTORS

Alternative precautions

24.06. (1) When the high voltage conductors cannot be de-energized, re-routed or effectively guarded, no work shall commence until approval is obtained from the Board and the following precautions are taken:

(a) the area, within which equipment or materials are to be moved, shall be barricaded and supervised to restrict entry to only those workers necessarily engaged in the work.

(b) a qualified person shall be designated as a watchman whose sole task, during the movement of any equipment or material, shall be:

(i) to observe the relative position of the moving equipment or material and the electrical conductors, and

(ii) to order the movement stopped at any time that contact appears probable, or when conditions arise which prevent the watchman from properly performing his task.

(c) positive means shall be provided for the watchman to give a clear, understandable stop signal to the equipment operator, and the watchman shall give the stop signal by no other means.

(d) while equipment or material is in motion in an area in proximity to energized electrical conductors, no person other than equipment operators shall touch any part of the equipment or material.

(e) no workman shall move a load, or any rigging-line, from its position of natural suspension, when it is in proximity to an energized electrical conductor.

Precautions for emergency work

(2) Where emergency action is required in proximity to energized high voltage electrical conductors, only qualified and properly instructed workers shall be exposed to the danger of contact with the electrical conductors. Every possible effort shall be made to control the hazards while work is being done, including the following precautions:

(a) entry into the area within which equipment or materials are to be moved shall be restricted to those necessarily engaged in the work.

(b) a qualified person shall be designated as a watchman whose sole task shall be:

(i) to observe the relative position of the moving equipment or material and the electrical conductors, and

(ii) to order the movement stopped at any time that contact appears probable or when conditions arise which prevent him from properly performing his task.

(c) positive means shall be provided for the watchman to give a clear, understandable stop signal to the equipment operator and the stop signal shall be given by no other means.

(d) while equipment or material is in motion in an area in proximity to energized electrical conductors, no persons other than equipment operators shall touch any part of the equipment or material.

(e) the equipment operator shall operate the controls from the seat provided on the equipment or from a metal stand which is integral with the frame of the equipment and clear of the ground, or from a metallic mat, bonded to the frame of the machine and located on the ground beside the machine. In no case shall be operate the controls while standing on the ground.

TREE TRIMMING NEAR ENERGIZED CONDUCTORS

Preliminary inspection

24.08. (1) Every area in which tree trimming in proximity to energized high voltage overhead conductors is intended shall first be inspected by a qualified person, authorized by the owner of the electrical system, for the purpose of identifying hazardous areas.

(2) No trimming shall be done in areas identified as hazardous unless:

Required precautions

(a) the necessary "Live Line Caution Tag" has been taken out by a qualified person authorized to do so by the owner of the electrical system, and

(b) an authorized, qualified person is in charge at the work site, and

(c) the workers are qualified tree trimmers, and

(d) the limits of approach specified in clause (3) are maintained.

Limits of approach

(3) Under no circumstances of work or inadvertent motion shall workers, other than qualified electrical workers, come closer to energized conductors than the following limits of approach:

VOLTAGE (Phase to Phase)	MINIMUM DISTANCE (Feet)	(Metres)
751 v to 20 kv	3	(0.9)
20 kv to 30 kv	4	(1.2)
30 kv to 75 kv	5	(1.5)
75 kv to 250 kv	10	(3)
250 kv to 325 kv	15	(4.6)
325 kv to 550 kv	20	(6.1)

Trees or branches in contact with energized conductors

(4) A tree or limb in contact with an energized high voltage conductor shall be removed by a qualified person authorized by the owner of the electrical system involved

Aerial devices

(5) All tree trimming vehicle-mounted aerial devices shall be in conformity with the requirements of regulation 32.36.

Insulated hand tools

(6) Insulated hand tools shall be used wherever practicable and shall be in conformity with the requirements of regulation 22.38.

Mobile chippers

(7) Mobile chippers shall be equipped with safety devices as required by regulation 16.126.

APPENDIX 35.

Extract from Safety Practices
Code Ontario Hydro

THE
HYDRO-ELECTRIC POWER COMMISSION
OF ONTARIO

SAFETY RULES

AND

STANDARD PROTECTION CODE

PART I

Safety Rules

PART II

Standard Protection Code

This issue supersedes the 1954 issue of the Safety Rules and Standard Protection Code.

1 9 6 2

SECTION VI

FORESTRY WORK

600 Forestry Work — Supervision.

1. When forestry work is undertaken by any department of the Commission, employees shall comply with the following rules on forestry work.
2. Since a line crew may be required to remove dangerous or fallen trees, it is therefore important that all line personnel be familiar with the safe practices required in forestry work.

601 Protection for Work.

1. Forestry employees shall be governed by the Standard Protection Code when their work requires the isolation and de-energizing of lines; they shall apply to the operator of the controlling station for protection guarantees on operator controlled circuits and to the Area Manager concerned, or his delegate, for protection on rural area controlled circuits.
2. Switching required to establish protection shall be performed by either station operators or area line personnel rather than by use of forestry employees, unless the required switching does not involve the use of climbing equipment, in which case a forestry employee may be employed as agent. A qualified lineman shall be employed for placing portable grounding devices and the forestry employees shall be assured that grounding devices have been placed in accordance with the Standard Protection Code before starting work.

602 Working Alone.

1. An employee may work inside a spray tank only when there is a workman outside the tank to render immediate aid if required.
2. When brush control surveys are made on foot in other than populated areas, at least two men shall work together.

603 Conditions Under Which Work Shall Be Suspended.

1. Work in trees shall not be started or if it is in progress it shall be suspended under the following conditions:
   (a) During electrical storms in the vicinity of the work. *NOTE: Men shall avoid taking shelter under or in the near vicinity of trees during electrical storms.*

(b) Whenever there is warning or evidence of an electrical storm in the vicinity of a circuit upon which protection has been established.

(c) When trees are ice-coated, except for work which is deemed absolutely necessary to restore or maintain service; under such emergency conditions, extreme caution shall be observed.

(d) When, in the opinion of the man-in-charge, the weather conditions are such as to make the job hazardous.

604 Protecting the Bark of Trees.

1. Tree climbers shall be worn only for climbing trees which are to be felled, and the use of tree climbers shall be confined to the trunk or main stems. While wearing tree climbers in trees, work shall be confined to the following:
   (a) The removal of small limbs by hand which interfere with the ascent of the forester.
   (b) The topping of single and double stemmed trees.
   (c) The placing of guide ropes.
   NOTE: Tree climbers shall be in accordance with Standard Practice.
2. Foresters shall wear boots with rubber or equivalent non-slip soles and heels.
3. When chains or wire rope are used to make attachments to live trees, a pad of burlap or other suitable material shall be used to protect the tree.

605 Permission to Work on Public Roads and Nearby Properties.

1. Before crossing private property to gain access to Commission rights-of-way or other properties, the owner of that property must be contacted and his permission obtained.
2. If forestry work is to be carried on in Fire Districts or adjacent to, or passing through Crown Land, all regulations and statutes issued by the Department of Lands and Forests pertaining to the work shall be fully observed.
3. Permission of responsible road authorities and of property owners shall be obtained before line clearing or brush control operations are undertaken.
4. Except in emergencies, written permits shall be obtained from the Ontario Department of Highways for any forestry work on Provincial Highways.

have been removed which might contact the line or cause damage to other trees or property. If the tree must be felled toward a power or telephone line, it shall be topped low enough to clear all conductors, poles, guys, etc.

(c) Pulling down trees by means of attachment ropes connected to a moving vehicle is prohibited. When it is necessary to anchor the tackle, it must be anchored to a fixed object such as a suitable tree, a truck with its wheels blocked or a stake holdfast. When removing limbs by use of tackle blocks or snatch blocks, a moving vehicle may be employed if, in the opinion of the man-in-charge, the surface provides good dependable traction for the vehicle.

(d) Guy ropes shall be used on all trees that are sufficiently large to cause damage should they fall in any direction other than that intended. The guy ropes shall be installed before any cutting is done at the base.

(e) Under no circumstances shall pike poles be used for the purpose of holding or pushing trees during felling operations.

(f) Anchors for guy ropes shall be installed in such a position that persons handling the guy ropes are able to stand well outside the striking distance of the tree.

(g) Before a tree is felled, men other than those actually engaged in cutting the tree shall keep clear of any area within the possible striking distance of the tree. Men shall not be allowed to remain in nearby trees if there is any doubt as to their safety.

(h) Ample warning shall always be given before a tree is expected to fall and the workmen must stand clear in case the tree springs from the stump while falling.

(i) Brush and other debris or equipment that would hamper free movement when using sharp tools or when getting clear in case of emergency shall always be cleared away.

(j) Ordinarily, trees shall be notched in the direction towards which they are to fall and sufficient holding wood shall be left to provide control.

(k) Under no circumstances shall a partially cut tree be left standing during a lunch hour or overnight.

(l) When removing a tree that is split, or a tree with twin trunks that is likely to split, chains or cable of adequate strength shall be placed tightly around

the tree before commencing the backcut. At least one chain or cable shall be placed above and as close as practical to the backcut to prevent separation of the trunk.

608 Lowering Severed Branches From Trees.

1. When it is necessary to remove branches from above a line and the branches cannot be controlled safely by hand, a crotched rope shall be attached and the limb pulled up by a workman on the ground. When necessary, a second rope shall be attached as a guide for lowering.
2. Ample warning must always be given before a limb or stub is dropped from aloft.
3. Allowing branches to fall on overhead lines, fences, flower beds or where they will damage private property must be avoided.
4. No severed branches shall be allowed to remain in a tree overnight or after the forester has left the tree.

609 Climbing Precautions.

1. When climbing to crotch the rope, the climber's full weight shall not be entrusted to one limb. If possible, one arm and the legs shall be kept around the trunk while climbing.
2. Trees shall be inspected closely for decay and weak or dead branches.
3. Additional precautions shall be taken in winter months when branches are more brittle.
4. Particular care shall be exercised when climbing any elm tree which has dead limbs or is in a dying condition. Such trees are probably badly weakened by Dutch Elm Disease.
5. When transferring from one tree to another, or from one main stem to another without climbing down to do so, the forester must crotch his rope in the first tree or stem climbed and be tied in his bowline before shifting to the other position.

610 Reporting Location of Forestry Squads.

1. The following information regarding the whereabouts of forestry squads shall be furnished to the Area Office and also to the operator at the controlling station when working on transmission lines or on station sites:
   (a) The time of starting and completing work each day.
   (b) The line section on which the squad is working, including any change of location from one section to another which may occur through the day.

(c) Days on which there is a reasonable certainty that no work will be undertaken due to adverse weather or other causes.

(d) The foreman's address and telephone number at which he may normally be reached after working hours.

611 Use of Safety Rope.

1. An approved safety rope shall be used by foresters during all tree work where climbing is involved, whether the work is performed from a ladder or from the tree itself. The following rules shall be observed in the use of such safety rope:

   (a) Before commencing work in a tree, the forester shall see that his rope is crotched, his taut line hitch safely tied and that the loops of the bowline or safety saddle are adjusted to fit his body properly. The rope shall not be used for descending while the taut line hitch is untied.

   (b) The rope shall be crotched on the tree at a point away from the live circuit so that the rope will prevent the forester from swinging or falling into the live conductors. When this is not practical the condition shall be brought to the attention of the foreman who shall be responsible for ensuring that the work is carried out safely.

   (c) When working over sidewalks or in areas frequented by the public, the free end of the rope shall not be allowed to dangle on or near the ground.

   (d) When working in a tree the forester shall keep his safety rope taut at all times after it is crotched.

   (e) The forester's safety rope must be given close inspection, of its entire length, each day before it is used.

   (f) Safety ropes shall not be used for lowering branches or guying trees.

612 Use of Portable Ladders.

1. When working from a portable ladder, it shall never be placed on a truck or other movable object.
2. When used in trees where the limbs in the top will not support the man's weight, ladders shall be secured to the tree trunk or to stout branches at the top and bottom with hand lines placed around the side rails as well as on the rungs.
3. When work is performed from a ladder, the ladder shall be secured at the top or bottom, or both, if there is a danger of the ladder slipping or falling.

4. Ladders shall be removed from trees when not in use.
5. The use of sectional ladders consisting of more than three sections shall not be permitted.

613 Handling Tools and Equipment.

1. The forester shall carry only his safety saddle and safety rope when faced with a long or difficult shinny previous to crotching his safety rope.
2. A rope or tool bag shall be used for passing tools and material to or from workmen in trees and in no instance shall tools or material be thrown to workmen. Moreover, tools shall be tied to the rope and not secured by passing them between the strands.
3. When not in use, hand saws shall be fastened securely to the forester's belt or saddle. When out of use temporarily, all pruners or pole saws shall be hooked securely over a limb of sufficient strength to carry their weight but under no circumstances shall pruners or pole saws be hung on a conductor.
4. Any exhaust pipe or stack which a workman might contact accidentally, also drive chains or belts on equipment, shall be covered with suitable safety guards.

614 Power Chain Saws.

1. The man-in-charge shall satisfy himself that any employee permitted to operate a power chain saw is qualified to do so.
2. No one except the operator shall be allowed within a radius of 6 feet of a one-man power chain saw when it is in operation except when it is used aloft in an aerial basket device.
3. Small power chain saws equipped with approved safety cutting chains and not more than 20 pounds in weight, may be used above the shoulder level provided that the following precautions are observed:
   (a) The saw shall be suspended from a rope, crotched above the cutting area, when removing lower limbs from standing trees from the ground.
   (b) When delimbing a felled tree, if the severed branches are removed from the path of the operator as he progresses in order to ensure safe footing.
4. Approved small gasoline-powered chain saws, as designated in Standard Practice, and electrically-operated chain saws may be used aloft from an aerial ladder and may be used aloft in trees if the saw is supported by a crotched rope independent of the climber's rope.

5. Electrically-operated power chain saws shall not be operated from the baskets of hydraulic aerial devices.

   NOTE: Small gasoline-operated chain saws such as designated in Standard Practice and pneumatically-operated and hydraulically-operated saws may be used aloft from approved aerial baskets.

6. When operating a power chain saw, the operator or operators shall make certain that he or they have secure footing.
7. The engine or motor shall be shut off when moving the power chain saw from one location to another except when trees are close together and the approach is unobstructed.
8. When starting a gasoline-operated power chain saw it shall be held firmly on the ground or some solid object such as a log or stump. This prohibits starting a chain saw by bracing it against any part of the body or by holding it in an elevated position.

   NOTE: Since the cutting chain of power chain saws may run when the engine is started, the operator must make sure that all persons and objects are clear before starting the engine.

9. The engine or motor of a power chain saw shall not be started until the saw is in the immediate work area, except when a warm-up period is required at which time the saw shall not be left unattended.
10. In the use of power chain saws, the following additional precautions shall be observed:
    (a) Two-man chain saws shall be carried with the blade indexed to the vertical or bucking position.
    (b) When carrying a one-man saw a long distance to the scene of an operation, the chain shall be suitably covered. When carrying the saw a short distance from tree to tree, the cover is not required but the blade shall be facing to the rear.
    (c) Cutting chains shall not be inserted in the guide rail groove while the motor is running.
    (d) All saws when operated by two men shall have the transmission horn or tail stock guard held against the material being cut before the cut is started and during all cutting operations. Direct-drive chain saws and one-man gear chain saws must be at full operating speed before a cut is started.
    (e) Hot saws must be permitted to cool for two or three minutes before refuelling. A hot saw shall be placed

on a log, stump or on bare ground rather than in dry litter or slash.

(f) Refuelling shall be done in an area free from flammable materials. Metal to metal contact shall be maintained between the gasoline can and the gas tank while refuelling the saw. Smoking is prohibited while the tank is being filled and approved fire fighting equipment shall be available in accordance with the requirements of the Commission's "Fire Manual".

(g) Saws shall be moved to a location at least ten feet upwind from the spot of refuelling before the motor is started.

(h) Gasoline-powered saws shall be equipped with mufflers to prevent escape of burning carbon particles from exhaust.

(i) Portable generators and portable electrically-driven tools shall be grounded as follows:

i. The generator frame shall be connected to a driven ground rod or other suitable ground.

ii. The non-current carrying parts of the tool and the generator frame shall be connected by the ground wire of the three conductor cord through an approved connector.

(j) Portable electrically-driven tools, cords and generators shall be handled with care. The tool and generator shall be stored under cover when not in use.

(k) Electric saws shall be inspected carefully before use. They shall be turned in for thorough inspection after every 60 running hours. Generators, including ground rod and cord, shall be turned in for inspection after every 120 running hours.

(l) The chain saw operator shall wear approved eye protection.

615 Pole Pruners.

1. When working where the pole pruners might come into contact with a live conductor, rubber gloves shall be worn and pole pruners shall not be grasped closer than four feet from the metal head. If phase to phase line voltage is higher than 44,000 volts, the work shall be held up until guaranteed protection is obtained.
2. When pole pruners or pole saws are wet or moist, their use near live conductors shall be governed by Rule 203-1. Pole pruners must be equipped with polypropylene rope and the pruners shall be maintained carefully.

3. In order to preserve the insulating qualities of wooden pruner handles, they shall be protected against the absorption of moisture. A protective coating of spar varnish shall be applied to the pruner handles and this protective coating must be maintained.
4. Pole pruners shall not be left lying on the ground nor shall they be otherwise subjected to abuse or misuse.

616 Work Near Live Conductors.

1. Wood, whether dry, green or wet, except when specially treated, shall be deemed at all times to be a conductor of electricity. While working in the vicinity of live conductors, the following rules shall be observed:
   (a) When extra care is required to ensure that work may be performed safely, the foreman shall choose men he knows to be competent.
   (b) The foreman or his delegate shall personally supervise the work, pointing out the danger that may be apparent to him as the work progresses.
   (c) When work is to be performed which requires extreme care but which can be carried out safely without a protection guarantee, the approval of station operator or Area Manager controlling the line shall be obtained before the work is undertaken.
   (d) Instructions concerning the Hold-Off, in accordance with Rule No. 2003, shall be observed by Forestry employees.
   (e) When working above conductors, the free end of the safety rope shall be passed over a limb on the side of the tree farthest from the live circuit.
   (f) A rope that has become caught or tangled shall be released by climbing to the entanglement rather than by pulling or jerking the rope.
   (g) Climbing shall be done on the side farthest from the circuit.
   (h) Under no circumstances shall a forester climb between live conductors. Only when authorized by the holder of a protection guarantee may he climb through conductors which are properly isolated and de-energized.
   (i) Should a limb be found to be in actual contact with a live conductor or so close to a conductor that it is likely to be brought into contact either by a slight gust of wind or by movements of the climber, the tree shall not be climbed until the branch has been cleared. The clearing operation shall be carried out

618 Removing a Limb from Contact.

1. In the case of a limb falling and becoming lodged on one or more conductors, men shall be warned to keep clear in case a conductor should burn off and fall. Approved methods for removal of the limb, depending upon the line voltage, are as follows:
   (a) *Telephone Lines* — under normal conditions the branch may be removed from telephone conductors by means of approved pole pruners.
   (b) *Lines Carrying 44,000 Volts, Phase to Phase and Under* — the branch may be removed with approved and properly maintained pole pruners. Rubber gloves shall be worn and the work shall be supervised directly by the man-in-charge. Care shall be taken not to stand directly below the conductors if possible.
   (c) *Lines Carrying Over 44,000 Volts, Phase to Phase* — the forestry foreman shall make application for protection to the proper operating authority. The operating authority shall determine procedure for establishing protection in accordance with Rule 601. During the interval a competent person shall be stationed at the site of the trouble to warn the public of any danger that may exist.

   NOTE: When the use of rubber gloves is mentioned in respect to Forestry work, it is only as an additional precaution while using approved tools such as pruners and pole saws under specific circumstances.

619 Aerial Devices — Ladders and Basket Type With Articulating Booms.

1. General.
   (a) Trucks equipped with aerial devices which are used for Forestry work shall not be moved unless the aerial device is in the stowed position except as noted in 619-3(c).
   (b) Trucks equipped with aerial ladders shall not be moved from one job site to another or to and from headquarters until the aerial ladder is fastened securely in the stowed position.
   (c) While an aerial basket device is being positioned near live conductors, or while the position of the basket is being changed when in close proximity to live conductors, a qualified forester shall act as an observer from a safety viewpoint.
   (d) Aerial ladders shall not be positioned over a live conductor. (Also see Rule 616-3.)

(e) All workmen shall remain clear of a truck that is equipped with an aerial device when the boom or ladder of the device is positioned near live conductors. If a workman is in the truck and has to leave, he must jump clear so as to avoid simultaneous contact with the truck and ground. Workmen may approach and touch the truck only after the boom or ladder has been moved away from the proximity of the live conductors.

(f) All workmen, when working from an aerial device, shall wear a safety belt or an approved half-inch safety rope which shall be fastened securely to the ladder, basket or boom.

(g) The safe distance for work near live conductors shall be maintained at all times when using aerial devices (Rule 203).

2. Aerial Ladders.

(a) Trucks equipped with aerial ladders which are used for forestry work shall not be moved under any circumstances with a workman on the ladder.

(b) At a job site where the trees are close together, an aerial ladder may be moved from tree to tree without being stowed provided that the ladder is centred over the truck and is lowered sufficiently to avoid all overhead obstacles.

(c) Mechanically-operated aerial ladders shall not be extended, raised or lowered with a workman aloft on the ladder. Hydraulically-operated aerial ladders shall not be extended or raised with a workman aloft on the ladder.

(d) Aerial ladders may be traversed with a man aloft from one face of a tree to another provided that the safe distance for work near live conductors as outlined in Rule 203 plus two feet is maintained and the elevation of the ladder is not altered. Traversing of ladders shall be confined to work on rural distribution and low voltage transmission lines and shall not be attempted unless the truck is on level ground.

(e) An extended, manually-operated aerial ladder shall be locked in position before the workman ascends the ladder.

(f) Only one workman at a time shall work from an aerial ladder except in case of an emergency.

3. Aerial Basket Devices.

(a) Only approved insulated aerial basket devices may be positioned over live conductors and this must be

done in accordance with O.D.S.P. HO 585-G1 or Divisional Standing Instructions.

(b) The voltage limitation of conductors over which approved aerial basket devices may be positioned shall be specifically and clearly stated on each individual device.

(c) Trucks equipped with aerial basket devices may be moved at the job site with a workman or workmen in the basket provided that the trees are close together, the booms are centred over the truck with the lower boom stowed, the surrounding ground is level and the baskets are lowered to within two feet of the ground.

(d) Workmen shall not transfer from a basket of an aerial device to a tree when the basket is positioned over a live conductor.

(e) In transferring from an aerial basket device to a tree, the workman shall crotch his safety rope securely in the tree prior to leaving the basket.

(f) The safe distance to which the aerial basket device may approach live conductors is outlined in O.D.S.P. HO 585-G1.

620 Mechanical Brush Saws.

1. Mechanical brush saws shall be maintained in good operating condition.
2. If the engine is cold it shall be held firmly on the ground with the blade clear while starting.
3. An assistant may start the saw motor after it has been warmed up when it is on the operator's back, provided the assistant approaches and leaves the operator from the rear. Cutting operations shall not be started until the operator is assured by the assistant that he is beyond the 15 foot safety limit.
4. Workmen other than the operator shall keep a distance of 15 feet from the saw while it is being operated.
5. The gasoline tank of the saw shall be filled only partially to avoid leakage.
6. Smoking shall not be permitted while servicing or using a brush saw and fire extinguishers shall be available as outlined in the Commission's "Fire Manual".
7. Trees larger than four inches in diameter shall not be cut with mechanical brush saws.
8. Brush that is in contact with or tall enough to fall into conductors shall not be cut with a mechanical brush saw.

9. The brush saw operator shall wear approved eye protection.

621 Mechanical Brush Chippers.

1. Mechanical brush chippers shall be maintained carefully in accordance with Standard Practices and Manufacturers' specifications.
2. The motor ignition switch shall be in the OFF position and the key shall be removed before attempting to service a brush chipper.
3. Rotation of the drum shall be blocked while working on the chipper blades.
4. Leather gloves shall be worn while working on or near the chipper blades.
5. Care shall be taken when changing the blades on any make of chipper to be certain that the bolts and the bolt holes in the wedges and cylinder are in good condition and that they are completely free of dirt or other foreign matter.
6. After changing the blades on any make of chipper a check shall be made to be certain that the wedge locking bolts are securely tightened. The ensuing sequence shall be followed to check the wedge locking bolts between blade changes:
   (a) For the first two days after changing the blades, the wedge locking bolts shall be checked for tightness at the job site before starting the chipper and again after chipping brush for five minutes.
   (b) After the first two days and until the next blade change, the wedge locking bolts shall be checked for tightness at the job site once a week before starting the chipper.
7. Prior to starting chipping operations, the feeder chute shall be checked for foreign objects.
8. When chipping brush on any travelled roadway, the chipper must be kept as far to the side of the road as is practicable.
9. Brush chipping shall not be done in close proximity to pruning or felling operations where the noise might interfere with oral instructions.
10. Approved eye protection shall be worn by all workmen close to the brush chipper while it is in operation.
11. Brush shall be fed to the chipper stem first. The workmen feeding brush to the chipper shall wear loose fitting gloves for easy withdrawal of the hand in the event that a glove should become caught on the brush.

12. (a) The hands or feet shall not be used to push brush past the face of the feeder chute. A push stick or brush shall be used to force short or thorny brush into the chipper.
    (b) Care shall be exercised when chipping dead wood in order to avoid kick-back.
13. Workmen shall not stand or pass directly in front of the exhaust chute while the brush chipper is in operation.
14. After feeding the brush into the chipper, the workman shall turn away from the travelled portion of the road when leaving the chipper.
15. No workman shall stand or sit on any part of the brush chipper while it is in operation or while it is being transported from one job site to another job site.
16. The following precautions shall be taken when coupling or uncoupling a brush chipper:
    (a) The coupling device shall be checked to be certain that the locking mechanism is working properly when attaching the chipper to the truck.
    (b) Safety chains shall be attached securely with only sufficient slack to allow the chipper to turn.
    (c) Sufficient manpower must be used when coupling or uncoupling the chipper to avoid injury to personnel.

622 Public Relations.

In the settled parts of Ontario, tree trimming or tree removal involves the public and private interest to a large degree. Permission is required from the authorities or owners concerned. The value of all fine healthy trees must be given careful consideration. In those cases where criticism of tree trimming or removal is anticipated, the matter should be referred to the Regional Manager for decision before permission is requested.

623 Power Sprayers — General Precautions.

1. Power sprayers and equipment shall be bolted or lashed securely to the carrying vehicle before travelling on public roads or on rights-of-way.
2. When spray vehicles are travelling in line over rights-of-way or on bush roads, the vehicles shall travel at a safe distance apart.
3. Static chains of suitable length shall be used on all spray vehicles operating on a high voltage right-of-way.
4. Care shall be exercised to maintain vehicle platforms as clear as possible of oil and chemicals. A treatment of non-skid material is recommended.
5. Personnel may travel on vehicle platforms only on specific authorization of the man-in-charge. If travel on such plat-

forms is permitted, there must be arrangements made so that the vehicle can transport personnel safely.

6. Access to vehicles with side racks shall be from the rear rather than over the side racks.
7. The driver shall remain seated in the driver's seat, with his seat belt fastened, while the vehicle is in motion.
8. When practical, men on foot shall scout ahead of spray vehicles so that particularly rough areas may be avoided.
9. When working on rocky terrain, it is recommended that boots with positive grip soles be worn.
10. Spraying shall not be carried out from the platform of moving vehicles unless specific authorization has been given by the man-in-charge. In such instances, provision shall be made to protect the man from being thrown off the platform. During roadside spraying the hose must be held up over guard rails, rocks, etc., so that the gun operator is not pulled off balance.
11. Spray operators shall keep their feet clear of the spray hose. Discharge hose must be held firmly into the tanks during filling to avoid lashing of the hose due to the high pressure.
12. Spray hose will recoil when filling with spray material. Sufficient slack must be allowed in the hose to compensate for recoil, approximately 5 feet, but any loop or kink in the hose must be taken out before the hose is filled.
13. When power hose reels are used, the last 25 feet of hose must be reeled on slowly to avoid whipping of the hose.
14. Spraying must be directed away from personnel and solid streams of spray shall never be directed towards the conductors of a line.
15. Care shall be taken when handling any spray chemicals. Approved protective clothing shall be worn when using an oil base spray. Approved eye protection and air breathing apparatus shall be worn when the work involves toxic solutions.
16. When a container is emptied of chemical it shall be cleaned out or disposed of in such a manner that persons, animals or fish will not be contaminated in any way by the chemical residue.
17. The spray tank filling hole cover shall be kept in place to prevent the contents from spilling.
18. Fire regulations issued by the Department of Lands and Forests and the Commission's "Fire Manual" shall be complied with carefully.
19. Fire shall not be started in the vicinity of sprayed brush having dead brown leaves.

    Open flame shall not be permitted near spraying equipment, containers or contaminated clothing.

APPENDIX 36.

Communications Net in Listed Form
for Various Groups affected by the
Present Boulevard Tree Program in
the City of Vancouver

STREET TREE PROGRAM
COMMUNICATION NETWORK

VANCOUVER DEPARTMENTS

Permits and Licenses

Legal Services

Planning

Fire

Urban Planning

City Manager

Police

Personnel

Health

Finance

Properties and Insurance

Engineering
- I. Street Lighting
- II. Sewers
- III. Electrical
- IV. Procurement
- V. Sanitation
- VI. Streets
- VII. Crossings
- VIII. Water
- IX. Projects
- X. Traffic
- XI. Inter-Departmental Responsibility

Development Permits

Politics

Mayor

Mayor's Office

Individual Council Members

Elected Park Board

UTILITIES

Hydro

Telephone

Cable T.V.

Gas

THE GENERAL PUBLIC ORGANIZED

Ratepayers' Groups

Merchant Groups

Community Groups

Environmental Groups

THE GENERAL PUBLIC UNORGANIZED

Those for Tree Programs and Trees

Non-resident Owners

PROVINCIAL GOVERNMENT

Pollution Control Board

Highways

Dept. of Agriculture

Forestry

Municipal Affairs

Endowment Land Administration

FEDERAL GOVERNMENT

Dept. of Transport at Airports

Manpower

NEWS MEDIA

Television

Local Newspapers

Provincial Newspapers

ACADEMIA

Universities

Colleges and Trade Schools

Other

MISCELLANEOUS

Park Board Planning

VanDusen Gardens

N.I.P. Committee

I.C.B.C.

APPENDIX 37.

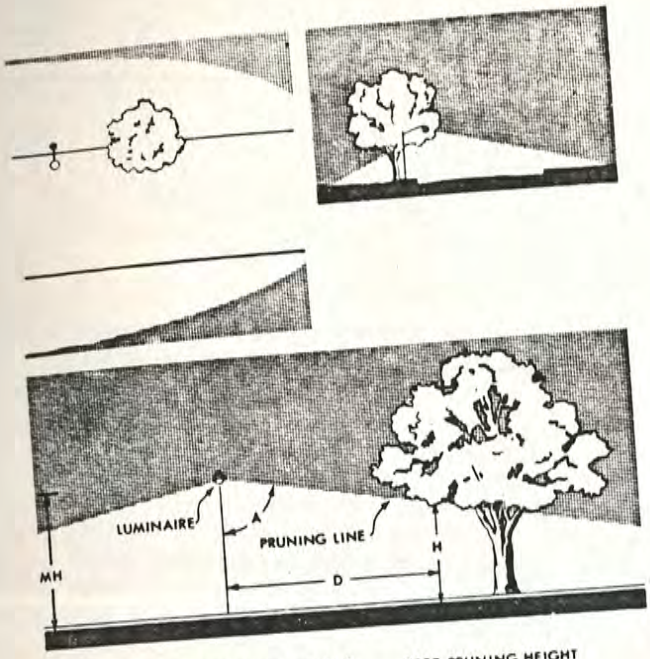
Engineering Society Standards
for Tree Trimming

Volume 7/Number 1 October 1977

JOURNAL

of the Illuminating Engineering Society

ublished quarterly in the United States of America by the Illuminating Engineering Society of North America, 345 ast 47th St., New York, N.Y. 10017. Second-class postage paid at New York, N.Y. and additional mailing offices. This publication is indexed regularly y Engineering Index, Inc., and is available on microfilm from University Microfilm, Ann Arbor, Mich. 48106. scription rates: $27.50 for four annual issues, plus extra postage to all countries in which second-class postage es do not apply. Single copies: $2.75; $7.00 to nonmembers. Editorial Office, 345 East 47th St., New York, Y. 10017. Printing Office, Easton, Pa.



PRUNING LINE AT ANGLE "A" ABOVE "USEFUL BEAM"	TREE PRUNING HEIGHT "H"
70°	MH-.36D
75°	MH-.26D
80°	MH-.17D

Figure A-5. Recommended tree pruning to minimize conflict with roadway lighting.

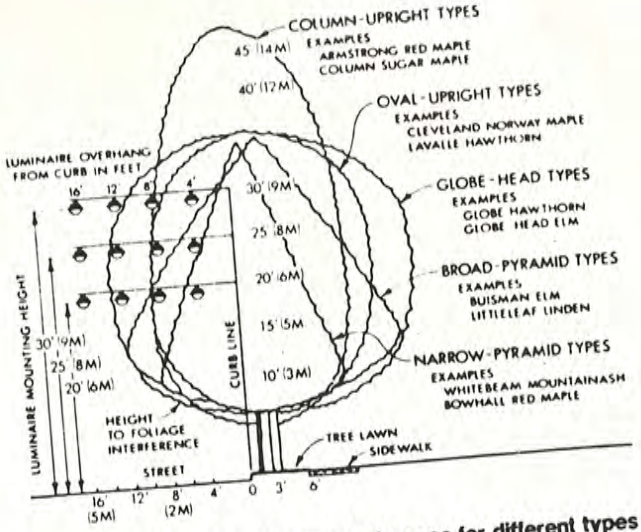


Figure A-6. Height to foliage interference for different types of trees and luminaire overhang from curb. Tree examples by E. H. Scanion.

compromises involve deviations from preferred system layouts with respect to luminaire spacing, mounting height, and transverse location. Such deviations usually should be accompanied by modifications in the light distribution provided by the luminaire. The amount of reduction in lighting effectiveness will vary depending upon the circumstance, type of modification and the extent of the deviation.

A-3.2 Design—modifications. (1) As an example of modification, all luminaires may be mounted on longer mast arms. This generally increases construction costs to some extent, but the gain in lighting effectiveness may be substantial if foliage interference is reduced. Another modification is span-wire suspension of luminaires over the center of the street. Construction costs are substantially higher because two poles are required for each luminaire. A major disadvantage of span-wire suspension is that swaying and bobbing of luminaires in the wind nullifies to a great extent the effectiveness of the light control provided by modern luminaires.

(2) Still another modification is to reduce the luminaire mounting height with a corresponding reduction in spacing, use of a smaller size lamp, and a lowering of the angle of maximum candlepower. This method materially increases the cost of roadway lighting.

(3) Only as a last resort, it might be expedient to increase lamp sizes to compensate for reduction in illumination levels caused by foliage interference. However, this has serious disadvantages because the impairment of light distribution and uniformity of illumination cannot be corrected by merely increasing lamp sizes. Also, cost would be increased considerably.

A-3.3 Design—departures. (1) Where deviations in longitudinal spacing of luminaires are made to minimize conflicts with trees, generally a 10 percent deviation from average spacing will not seriously affect the uniformity of illumination. As a maximum compromise for certain types of luminaires, deviations up to 20 percent can be tolerated providing no two consecutive luminaire locations are involved. When two or more consecutive locations necessitate deviations from the average spacing, then the resulting uniformity of illumination should be checked.

(2) Uniformity of location of luminaires out over the street is important in respect to both visibility and appearance. Only where there is no other reasonable compromise should any transverse deviation of an individual luminaire be permitted. The length of the luminaire support should be selected which best meets the requirement of each particular street. It should be kept in mind that when using longer supports which approach the center of the street, pruning requirements also become less.

A-3.4 Design—data. (1) Figs. A-6 and A-7 are intended to serve as a guide for determining proper overhang distances of luminaires for different heights of mounting and for different types of trees.

(2) Although foliage interference mostly affects the illumination on the roadway pavement, the importance of adequate lighting for the sidewalks should not be overlooked. There may be instances on local traffic residential roadways where good sidewalk illumination is even more important than lighting of the roadway itself. Generally, this can be

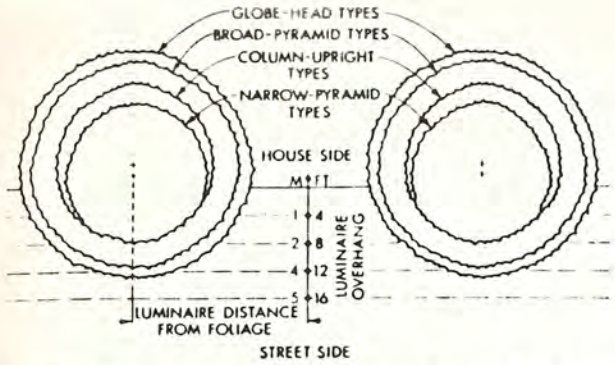


Figure A-7. Longitudinal and transverse location of luminaires as related to different types of trees.

obtained either by altering the luminaire positions or by pruning, or a combination of both methods.

(3) The modern trend in roadway lighting practice is to use larger light sources with luminaires having light distributions appropriate for the luminaire spacing, mounting height, and transverse positions, and for the roadway dimensions. Such proper lighting design is particularly important on residential and local traffic thoroughfares. Also, it should be emphasized that, where we see by silhouette discernment, the high angle emission of light from the luminaire is very important. Obviously with longer spacings there are proportionately fewer luminaires which, in turn, reduce the requirements for pruning. This further contributes to lower combined maintenance cost of trees and lighting. Observations in different sizes of towns with properly designed roadway lighting indicate that as an average the number of actual conflicts between luminaires and foliage is in the order of 50 percent on the more heavily wooded roadways. It is quite probable that, of the total existing residential and traffic roadway mileage, the foliage interference is considerably less than 50 percent.

A-4 Tunnels. The lighting of tunnels is a very special situation and i is covered in the IES Committee report, "Lighting of tunnels."*

* Subcommittee on Lighting of Tunnels and Underpasses of the Roadway Lighting Committee, "Lighting of tunnels," JOURNAL OF THE ILLUMINATING ENGINEERING SOCIETY, Vol. 1, No. 3, April 1972, p. 247.

Appendix B—
Computation of roadway illumination

(This Appendix is not part of the "American National Standard practice for roadway lighting, ANSI/IES RP-8-1977," but is presented as supplemental material for the user of the Standard.)

B-1 Introduction. The basic examples and computations that follow apply to roadways. It is obvious, however, that the data and techniques can be applied to adjacent walkways, median strips and other areas. For special computations relating to area lighting and high mast lighting, refer to Appendices C and D.

B-2 Calculation procedure. The general procedure for calculating maintained roadway illumination consists of a series of steps before the actual calculations begin. These steps are divided into two major groups: objectives and specifications, and light loss factors. A third group covers the calculations and will vary in the number and type of steps depending on the illumination quantity desired—average or at a point. The following material shows the steps for calculating maintained levels of illumination, that is, the lowest level of illumination on the roadway.

B-2.1 Objectives and specifications

B-2.1.1 Roadway classification. Providing proper lighting for quick, accurate and comfortable seeing at night is the basic reason for the design calculation and the procedure presented here. A complete knowledge and understanding of the location and type of roadway is essential. (See section 1 of Standard.)

B-2.1.2 Quality required. A knowledge and understanding of the quality of illumination required for seeing on roadways is important. (See paragraph 3.4 in the Standard.)

B-2.1.3 Quantity required. The *average* maintained levels of illumination can be found in Table I of the Standard based on the determination of roadway and area classification in section 1. Also, consideration should be given to allowable limits of uniformity (see paragraph 3.5) and the percentage of burned-out lamps that will be tolerated.

B-2.1.4 Area atmosphere. Next to be considered is an analysis of the environment in which the lighting system will operate. Dirt in the atmosphere will have come from two sources: that from adjacent atmosphere(s) in the area and that generated on the roadway itself (the surrounding atmosphere). The right hand portion of Fig. B-1 shows five groups of typical area atmospheres.

B-2.1.5 Area description. A complete description is required for each area to be lighted. This should include the physical characteristics, such as roadway widths, curvatures, grade, obstructions (trees) and border areas.

B-2.1.6 Selection of luminaire. Selecting the specific luminaire requires the almost simultaneous consideration of many factors. Selection of the type of luminaire for a given roadway depends upon the requirements and conditions found above, such as dimensions of roadway and atmospheric conditions and such factors (whose relative importance will vary from project to project) as: mounting height; luminaire dirt depreciation; lamp choice; maintenance considerations, including cleaning and lamp replacement; luminaire and installation appearance;

CITY OF VANCOUVER

OFFICE — CITY HALL

CITY ENGINEERING DEPARTMENT — April 26, 1973

MEMO TO: B. W. Wallace
H. L. Crawford
W. A. Keddy

FROM: J. G. Woff

SUBJECT: STANDARDS FOR STREET CLEARANCES

I plan to establish 'agreed to' standards as far as street clearances are concerned for the Traffic Division.

Do you (or your staff) have any comments regarding the following, or can you suggest further clearances that can be added to the list.

Clearances

Curb to street poles - minimum of 1 foot
Desirable minimum vertical overpass clearance - 19 feet
Absolute minimum vertical overpass clearance (no trolley busses) - 16 feet
Clearance beneath trees at curb - 12'-6"
Clearance beneath trees 13' from curb - 19' (on trolley routes), 16' (non-trolley route)
Vertical clearance for pedestrians - trees, traffic signs - 7 feet
- canopy - 7'-6"

No trees to be placed at landing areas, or in the 20-foot corner clearance.

J. G. Woff

JGW/pfd

1" = 2 ft

APPENDIX 38.

Detailed Tree Profile

Botanical Description

- Place of Origin
- History of Origin
- Origin of Name
- Provenances Available
- Genetic Characteristics and Variability
- Family
- Genus
- Species
- Varieties
- Cultivars
- Hybrids
- Related Plants
- Natural Habitat
- Natural Associations

Morphological Description

- Flowers
- Fruit
- Leaves
- Trunk
- Bark
- Branching Habit
- Crown Shape
- Overall Height Maturity
- Overall Spread Maturity
- Root Type
- Buttressing

Growth Description

- Time for Establishment
- Vigor
- Growth Rate
- Longevity

Streetscape Characteristics

- Form
- Texture
- Mass
- Silhouette - Winter
- Silhouette - Summer
- Foliage Seasonal Effect
- Phenology

- Fruit Seasonal Effect
- Persistence
- Uses
- Flowers
- Color
- Seasonal Effect
- Fragrance
- Compatibility with Other Species
- Traffic Conflicts
- Engineering Conflicts

Establishment

- Propagation
- Hardiness
- Soil Fertility Requirements
- Soil Type
- Soil PH
- Soil Moisture Requirements
- Ground Preparation Required
- Site Requirements
  - Sun
  - Shade
- Transplantability
- Size at Planting
- Spacing - Minimum
- Spacing - Maximum
- Overall Space Requirements
- Adaptability for Street Use
- Suitability for Particular Sites
- Environmental Resistance to Stress
  - Air Pollution
  - Wind
  - Ice
  - Flooding
- Special Characteristics

Maintenance

- Staking
- Wrapping
- Guying
- Mulching
- Watering
- Fertilizing
- Pruning
- General Cleanliness
- Fall cleanup

Problem Potential

- Undesirable Growth Characteristics
- Vandalism Resistance
- Suckering
- Water Sprouts
- Allergenic Potential
- Abiotic Problems
- Insect Problems
- Disease Problems
- Rotation Constraints

Utilization

- Park Board Conversion - Rough Lumber
- City Conversion - Rough Lumber
- Saw Mills
- Chip Board
- Fire Wood
- School Board Use
- Other

APPENDIX 39.

Index to Boulevard Tree Discussions
by City Council from 1973 to 1978

Index No.	Topic
112	0
113	0
114	0
115	Tree Planting Strathcona: 228
116	0
117	Training Policy and Program
118	0
119	Tree Removal for Crossing 1176 W. Georgia: 80
	Tree Planting Cedar Cottage N.I.P. Allocation: 574
120	Tree Relocation 1045 Burnaby: 575
	Tree Relocation for crossing 1934 Barclay: 859
121	0
122	Tree Planting on Victoria/Commercial
	Cedar Cottages N.I.P. Appropriation: 217
	Tree Planting in Apartment Areas of Kitsilano N.I.P.: 380
	Tree Planting on Commercial from East 15th to Broadway: 572
123	0
124	0
125	Tree Planting Pilot Project Chinatown: 150
	Tree Relocation for crossing 1944 Denman: 277
126	Trees Provincial Government Complex: 746
127	Trees London Plane: 800
128	Tree Planting Provincial Government Complex: 32
	Trees on Boulevard 825 Bute: 606

APPENDIX 40.

Eleven Categories of those Groups
Outside City Hall that interact
with the Boulevard Tree Program

Other Municipalities

Burnaby
University Endowment Lands
North Vancouver District & City
West Vancouver
Surrey
New Westminster
Richmond
Delta
Langley
Port Moody
Coquitlam

Industrial/Commercial Sector

Tree Companies
Arboricultural Supplies
Equipment Supplies
Pesticide Supplies
Businessmen's Associations
Nursery Trades Association

Professional Groups

Landscape Architects
Architects
Planners
Foresters
Agronomists
Engineers

Utilities

B. C. Hydro Electricity
B. C. Hydro Gas
B. C. Telephone
Cable TV
Water
C.N.C.P.
Steam (CBD)

General Public Organized

West End Traffic Committee
Rate Payer's Groups
Local area Planning Committees

General Public

Property Owners
Renters

Federal Government

Agriculture & Forestry
Health & Welfare
Manpower & Immigration

Provincial Government

Ministry of Parks & Housing
Ministry of Municipal Affairs
Ministry of Labour
Office of the Provincial Secretary
Ministry of Consumer & Corporate Affairs
Ministry of Environment

News Media

Provincial papers
Local area papers
Local T.V.
Magazines
Local radio

Academia

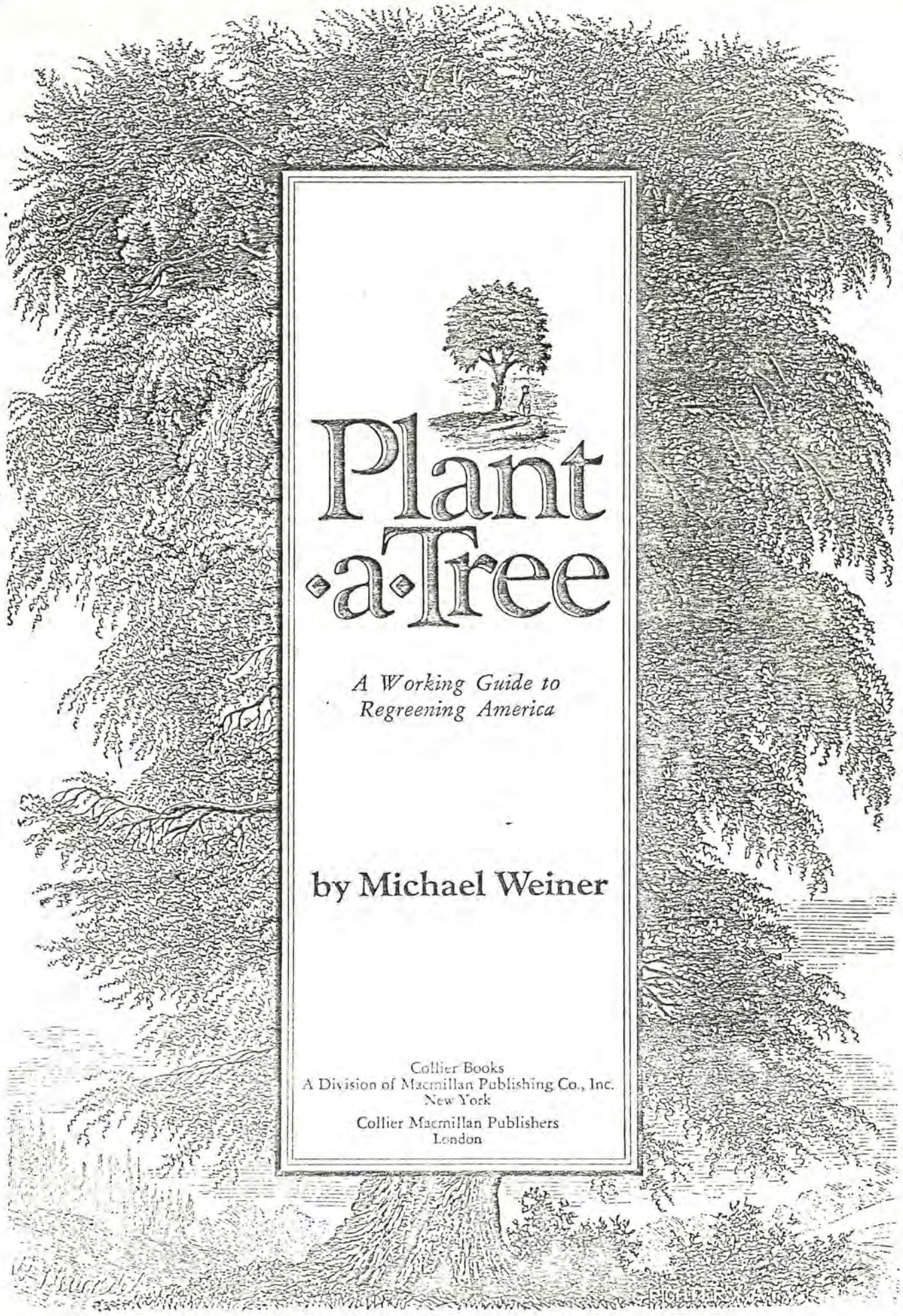
U.B.C.
S.F.U.
B.C.I.T.
Other colleges

Others

Garden Clubs

APPENDIX 41.

Landscape Architecture Opinions
concerning the existing Boulevard
Tree Program



Plant-a-Tree

A Working Guide to Regreening America

by Michael Weiner

Collier Books
A Division of Macmillan Publishing Co., Inc.
New York

Collier Macmillan Publishers
London

HORSECHESTNUT, RED
LOCUST, BLACK
MAPLE, NORWAY
MAPLE, SILVER
MAPLE, SUGAR
PLANETREE, LONDON
PLUM, BLIREIANA
PLUM, PURPLELEAF MYROBALAN *(Prunus cerasifera pissardi)*
RED CEDAR, EASTERN

Ontario, South of Ottawa

Class No. 1—100%

BEECH, PURPLE EUROPEAN *(Fagus sylvatica atropunicea)*
LINDEN, LITTLELEAF
MAPLE, NORWAY
MAPLE, SCHWEDLER NORWAY
MAPLE, SUGAR
OAK, EASTERN RED *(Quercus borealis maxima)*

Class No. 2—80%

ASH, WHITE
BEECH, EUROPEAN
ELM, AMERICAN
HICKORY, BITTERNUT *(Carya cordiformis)*
HONEY LOCUST, THORNLESS
HORNBEAM, AMERICAN
MOUNTAIN ASH, EUROPEAN
OAK, PIN
PLANETREE, AMERICAN (SYCAMORE)
WALNUT, BLACK

Montreal and Vicinity

Class No. 1—100%

ELM, AMERICAN
LINDEN, CRIMEAN
LINDEN, LITTLELEAF
MAPLE, NORWAY
MAPLE, SCHWEDLER NORWAY
MAPLE, SUGAR
OAK, EASTERN RED

Class No. 2—80%

ASH, WHITE
GINKGO (MALE)
HACKBERRY, COMMON
HAWTHORN, WASHINGTON
HICKORY, BITTERNUT *(Carya cordiformis)*
HONEY LOCUST, THORNLESS
HOPHORNBEAM, AMERICAN
LILAC, JAPANESE TREE *(Syringa amurensis japonica)*
PEAR, CALLERY
PINE, SCOTCH *(Pinus sylvestris)*
SPRUCE, BLUE COLORADO *(Picea pungens glauca)*

British Columbia: (See ISTC tree list, this section.)

Unfortunately for the people of Vancouver the Board of Parks is replacing "the huge old elms, London planes, maples, horsechestnuts, etc., with the smaller trees." The little, "untrees" have been declared more suitable for urban needs (even though the grand, old specimens are hardy and do so much more in the way of cleaning the air, shielding ugly urban views, muffling sounds, etc.).

The city of Vancouver seems to have lost its role as Canada's frontier, both treewise and with regard to individualism. "Individuals are *not allowed* to plant trees on city streets, even at their own expense."

If some of the magnificence of old Vancouver is to be retained and incorporated into the city of new buildings which is continually under construction then the *big trees* must once again be planted! Maples, oaks, elms, planetrees, tulip trees, sweetgums, and some large conifers are definitely in order. Only the citizens of Vancouver can prevent a major error in tree selection that will, if continued, create a pitiful sight for the next fifty years.

Manitoba:

The city of Winnipeg Parks and Recreation Department has planted annually, for the years 1970–72, between 1,300 to 1,800 trees. The planting of boulevard trees by individuals is *not* encouraged.

Of the species enumerated below the Japanese tree lilac and littleleaf linden would be used more widely by the Parks Department if they were available in larger planting size:

BOULEVARD TREE PLANTINGS ON WINNIPEG'S MAJOR STREET SYSTEM

Species	Percentage of Total Trees Planted in 1972
ASH, GREEN	24%
BASSWOOD	18
BIRCH, PAPER	1
CHOKECHERRY, SHUBERT	8
CRABAPPLE, ROSYBLOOM	.5
ELM, AMERICAN	3
ELM, SIBERIAN	25
JAPANESE TREE LILAC (*Syringa amurensis japonica*)	3
LINDEN, LITTLELEAF (Hardy strain)	.1
MAPLE, SILVER	5
POPLAR, BERLIN	.1
POPLAR, NORTHWEST (*Populus deltoides* x *P. balsamifera*)	.1
RUSSIAN OLIVE	.2
WILLOW, LAUREL	7

don vaughan & associates ltd.

November 15, 1977

TO: STANDING COMMITTEE OF COUNCIL
ON PLANNING AND DEVELOPMENT

RE: USE OF PLANE TREES ON 51-61-71
PROJECT, CITY OF VANCOUVER

I have been asked by Robert Zinser of Arthur Erickson, Architects to review and comment on the use of plane trees on this project.

My concerns are that intensive use of street trees in the number specified and double rows of planting with fifteen foot (15') spacing is an essential to the overall concept for this project. To diminish this by wider spacing would definitely change the character and concept - not only would the project suffer, the City would also.

Plane trees at the spacing recommended allows less development of the tree and, as a result, less root development. Realizing this and accepting the unique character of this tree, it most successfully achieves the concept for this project. The root problem - which is a relative problem with any street tree - should not be the determining factor.

This project, like many others, is an example of our frustration over the past few years in trying to incorporate street trees with the development of urban projects. It would appear that the City would prefer no street trees to be planted in association with urban projects.

On this basis, developers are being discouraged from doing any landscaping outside the property boundaries. Development Permits are difficult to obtain and prolonged by further meetings because of the street trees. It is disappointing when the developers are trying to positively enforce the pedestrian character of the streets. They are encouraged to do as little as possible.

As mentioned in Arthur Erickson's brief, Vancouver's noticable lack of street trees puts the city far behind cities throughout the world. The continual negative attitude towards street trees in the City (which overrides just plane trees) is unjustified. The presence of trees in the urban area more than justifies the problems of maintenance, i.e. leaf clean-up and root growth.

Don W. Vaughan

associates: james jarvis, ken mckillop, jane redpath business manager: carolyn gibbs
suite 210-1152 mainland street, vancouver, b.c., V6B 2T9 phone 685-0366

APPENDIX 42.

Categories exerting a Major Constraining Influence on the Establishment and Maintenance of Boulevard Trees

PHYSICAL CONSTRAINTS

Public Transportation

Bus Zones
Bus Shelters
Transit Supervisor Facilities
Seats
Garbage Bins
Trolley Support Poles
Trolley Wire Guys
Trolley Wires
Trolley Feeders

Private Transportation

Parking Meters
Taxi Zones

Commercial Transportation

Loading Zones

General Traffic Information

Road Signs Regulatory
Road Signs informational
Traffic Lights
Corner Visibility

Public Safety

Fire Hydrants
Fire Call Boxes
Street Lights
Street Signs Illuminated
Street Signs Other

Streets General

Distance of Tree Pits from Curb
Size of Tree Pits
Size of Tree Grates
Clearance beneath Trees at Curb
Clearance beneath 15 ft. from Curb
Clearances between Trees 20 ft. from Curb on Trolley Hooks
Vertical Clearances from Sidewalk to Lowest Branch
Clearances of Tree Crown from Shop Signs or Canopies
Corner Clearances
Tree Spacing
Tree Spacing in Beautification Areas
Container Spacing
Clearance from Private Driveways

Streets Industrial

Tree Spacing
Vertical Clearance at Curb

Commercial Streets

Spacing
Vertical Clearance at the Curb

Arterial Streets

Spacing
Inspection Frequency
Vertical Clearance at the Curb
Vertical Clearance 15 ft. from Curb

View Locations

View without parking facilities
View with parking facilities

Other Locations

Pedestrian Crossings
Park Facilities
School Grounds

Utilities Above Grade

Electrical
Low Voltage Distribution Pole
Multi Voltage Distribution Pole
Sub Transmission Pole
Electrical Conductors up to 12kv
Electrical Conductors up to 25kv
Electrical Conductors up to 60kv
Electrical Conductors up to 138kv
Service Lines
Guy Wires

Joint Use Poles

Telephone Open Wire
Telephone Cable
Telephone Trunk Service
Telephone Kiosks
Cable Television

Electrical Utilities Sub Surface

Distribution
Transmission
Inspection Manholes
Water Systems
Water Mains
Feeders
Hydrants
Manholes
Stopcock Access
Sewers Feeder
Sewers Trunk
Storm Drains
Other Facilities

Gas Systems

Gas Trunk Lines
Gas Feeder Lines
Gas Valves
Gas Regulators

APPENDIX 43.

Amplified List of Categories Exerting a Constraining Influence on the Establishment and Maintenance of Boulevard Trees

Water

- Insufficient Water
- Excess Water

Temperature Extremes

- High Temperature Stress
- Low Temperature Stress

Other Climatic Stress

- Wind
- Snow
- Ice
- Lightning
- Light Conditions
- Direct Sun

Soil

- Compaction
- Insufficient Depth
- Mineral Inbalance
  - Nitrogen
  - Phosphorus
  - Potassium
  - Magnesium
  - Calcium
  - Iron
  - Zinc
  - Boron
  - Manganese
  - Copper
  - Molybdenum

Air Pollution

- Particulate Matter
- SO_2 Halogen Compounds
- Ethylene
- NO_2 O_2 Methane
- Peroxyacyl Nitrates
- Pollutant Combinations

Miscellaneous

- Salt
- Herbicides
- Fungicides and Insecticides
- Heating Gas
- Dog Urine
- Soil Pollution

Miscellaneous Hydrocarbons
Miscellaneous Disturbances

APPENDIX 44.

Discrepancy concerning the
Existence of a Tree Inventory
for City of Vancouver Boulevard
Trees

City Engineering Department 5th October, 1970.

MEMO TO: City Engineer

FROM: Assistant City Engineer (Engineering-Planning & Control)

SUBJECT: TREE SURVEY

Early in 1969 a field survey of all boulevard trees was carried out. Each tree was recorded by type (deciduous or coniferous) and located by side of street, hundred block, street co-ordinate and Engineering Department work district. The field information was then keypunched and stored for future analyses. This file contains approximately 12,000 block-sides having trees. Any additions or deletions of trees by the Park Board since March 1969, have not been recorded in this file.

The existing records could give totals of trees by type, street or district.

WHC/rm

W.H. Curtis
Assistant City Engineer
Engineering-Planning & Control

Trees and Birds

The best result is the abundance by planting trees [illegible] coniferous, and the trees found most suitable are the Blue [illegible]

APPENDIX 45

An Example of Past Attempts to make
Records concerning Boulevard Trees

COPY

CITY ENGINEERING DEPARTMENT
VANCOUVER, B.C.

City Engineering Department **February 26, 1970**

Memo to: Assistant City Engineer
Sewer, Water and Sanitation

From: Assistant City Engineer
Streets & Structures

Copy to: R. M. Martin
G. H. Lawson
R. C. Boyes

Subject: WEST END STREETS

Studies are currently underway to develop an improvement program for streets in the Downtown West End. One major factor in such a program is the renovation of the sewer system in this area recommended in the Rawn Report. In order to proceed further with our studies, it is essential that we determine which of the streets and lanes will most probably be on the routes of the new sewers. It would also be desirable to get some idea as to appoximately when the sewer work on the various routes will be performed.

If you could mark up a street map of the west end indicating sewer routes and probable year of future construction, it would be a great help to us.

Assistant City Engineer

AP:dm

Y/S 1.

ST SIDE

istance .L. to ront/Walk	Remarks
-	N.T.
-	N.T.
-	N.T.
-	N.T.
12	1 S. @ S. end
12	3 S.
12	1 L. 4 S.
12	5 L.
12	10 L.
12	6 L.
12	10 L.
12	6 L.
12	3 L.
12	3 L.
12	1 L.
12	4 L.
12	8 L.
12	1 L.
12	2 L.
12	1 L.
12	3 S.
12	6 L.
12	[illegible]

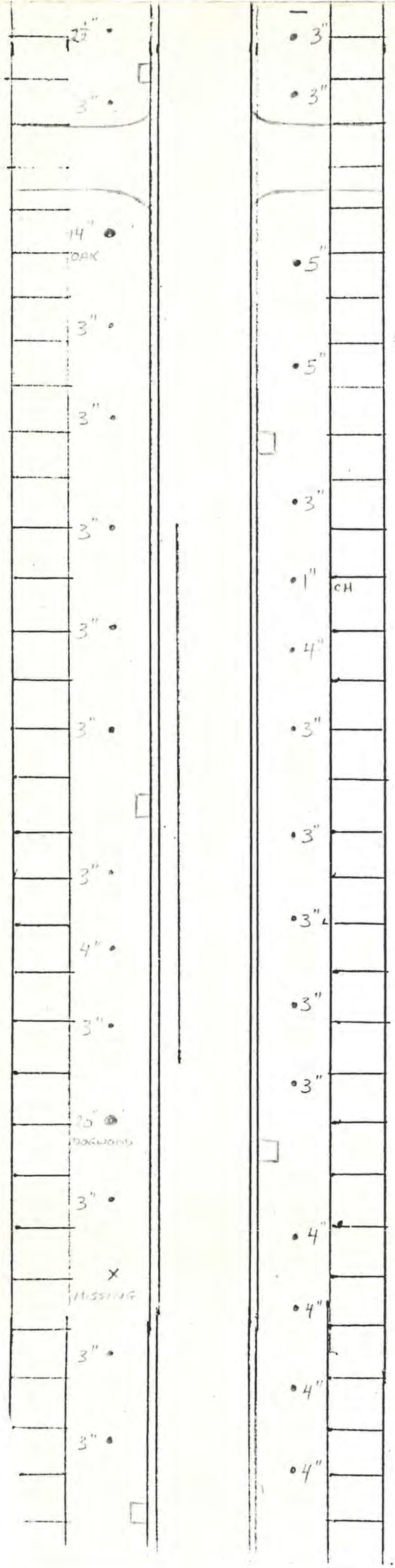
Street Name	From	To	Clear Width Between Trees	Distance Face of Tree to Front/Walk	Distance P.L. to Front/Walk	Remarks	Distance Face of Tree to Front/Walk	Distance P.L. to Front/Walk	Remarks
	NORTH - SOUTH STREETS			WEST SIDE			EAST SIDE		
Cardero (Cont)	L/N Burnaby	Davie	32	5.5	12	4 L.	4.5	12	3 L.
	Davie	Pendrell	31.5	5.5	12	6 L.	5	12	8 L.
	Pendrell	Comox	32.5	4	12	13 L.	5.5	12	5 L.
	Comox	Nelson	32	5	12	6 L.	5	12	5 L. 1 S.
	Nelson	L/N	29.5	6.5	12	3 L.	6	12	3 L.
	L/N Nelson	Barclay	32	5	12	3 L.	5	12	3 L.
	Barclay	Haro	33	4	12	2 L. 2 S.	5	12	6 L.
	Haro	Robson	30.5	5.5	12	3 L.	6	12	8 L.
	Robson	L/N	34.5	3.5	12	2 L.	4	12	3 L.
	L/N Robson	Alberni	-	3.5	12	1 L.	-	12	N.T.
	Alberni	Georgia	33.5	4	12	2 L.	4.5	12	4 L.
Nicola	Beach	L/N	-	3.5	12	2 L. 1 S.	-	12	N.T.
	L/N Beach	Harwood	-	4	12	3 L.	-	12	N.T.
	Harwood	L/N	34.5	3.5	12	3 S.	4	12	4 L.
	L/N Harwood	Burnaby	35.5	3	12	3 L.	3.5	12	3 L.
	Burnaby	Davie	35	3	12	5 S.	4	12	2 L. 4 S.
	Davie	Pendrell	35	3	12	3 S.	4	12	8 L.
	Pendrell	Comox	34	4	12	4 L. 3 S.	4	12	5 L.
	Comox	L/N	35.5	3.5	12	4 L.	3	12	2 L.
	L/N Comox	Nelson	-	-	12	N.T.	4	12	4 L.
	Nelson	L/N	35.5	3.5	12	4 L.	3	12	3 L.
	L/N Nelson	Barclay	35	3	12	2 L.	4	12	5 L.
	Barclay	Haro	34	4	12	10 L.	4	12	
	Haro	Robson	34.5	3.5	12	8 L.	4	12	
	Robson	Alberni	35	3.5	12	8 L.	3.5		

3

TREE PLANTING

DATE	LOCATION	VARIETY	AMT.
1963	2100,2200-EDDINGTON DRIVE	FRAXINUS ORNUS	26
1963	3600-BLOCK WEST 19th AVE	CHERRY AKEBONO	12
1963	3200,3300-BLOCKS BALACLAVA	BLUE ASH	14
1963	3900-BLOCKS WEST 29th AVE.	FRAXINUS ORNUS	19
1963	3100,3200-BLOCKS WEST 31st AVE.	HONEY LOCUST	22
1963	4400-BLOCK WALLACE	MALUS FLORIBUNDA	11
1963	3700-BLOCK WEST 13th AVE.	PRUNUS BLIREANA	10
1963	3000,3100-BLOCKS WEST 24th AVE.	MALUS FLORIBUNDA	18
1963	4400-BLOCK WEST 14th AVE.	PRUNUS NIGRA	23
1963	4500-BLOCK WEST 2nd AVE.	PRUNUS BLIREANA	13
1963	3300-BLOCK WEST 32nd AVE.	PRUNUS NIGRA	12
1963	2700,2800,-BLOCKS WEST 16th AVE.	FRAXINUS ORNUS	16
1963	3500-BLOCK-BLOCK WEST 32nd AVE	MALUS FLORIBUNDA	24
1963	3800-BLOCK WEST 30th AVE.	PRUNUS NIGRA	16
1963	3900-BLOCK WEST 21st AVE.	LAGOON CHERRY	18
1963	4600-BLOCK WEST 14th AVE.	MALUS FLORIBUNDA	11
1963	4700-BLOCK BLENHEIM	PRUNUS NIGRA	11
1963	3000-BLOCK WEST 19th AVE.	GLEDITSIA INERMIS	6
1963	3200-BLOCK WEST 30th AVE	MALUS FLORIBUNDA	9
1963	3000-BLOCK CROWN	PRUNUS NIGRA	13
1963	4600-HAGGART	CHERRY KWANZAN	9
1963	3200-BLOCK WEST 32nd AVE.	CHERRY KWANZAN	20
1963	3300-BLOCK WEST 32nd AVE	PRUNUS NIGRA	11
1963	4200-BLOCK BRAEMRIDGE	GLEDITSIA TRIACANTHOS	5
1963	4300-BLOCK BRAEMRIDGE	FRAXINUS QUADRANGULA	5
1963	2100-BLOCK WEST 12th AVE.	FRAXINUS QUADRANGULTA	10
1963	2200-BLOCK WEST 12th AVE(NORTH SIDE)	LIQUIDAMBER STYRACIFLUA	9
1963	2200-BLOCK WEST 12th AVE.(SOUTH SIDE)	SORBUS ARIA	9
1963	4600-BLOCK WEST 3rd AVE.	CHERRY MYAKO	16
1963	4600-BLOCK WEST 15th AVE.	CHERRY MYAKO	6
1963	3800-BLOCK WEST 11th AVE.	CHERRY AVIUM-PLENA	21
1964	3400-BLOCK CARNARVON	CARPINUS QUERCIFOLIA	15
1964	1700-2000-HIGHBURY	AVIUM-PLENA	18
1964	WEST SIDE(CARNARVON PARK)	ACER RUBRUM	14
1964	4600-BLOCK HIGHBURY	CHERRY AVIUM-PLENA	8
1964	3900-BLOCK BLENHEIM	CHERRY AVIUM-PLENA	10
1964	3900-BLOCK WEST 14th AVE	CHERRY SUBHIRTELLA AUTUMN	12

416
416



SECTION	CORNER	
73	B	

LOCATION. 500 - 600 E 54

FAMILY. MALUS M I

VARIETY ALDENHAMSIS

FLOWERING.	✓	SHADE.	

YEAR PLANTED.	1972
CURBS.	✓
BLVD. WIDTH.	10'

CONDITION.	GOOD ✓	FAIR	POOR.

NEED LOW BRANCHING	NO
NEED PRUNING.	✓
NEED SPRAYING.	✓
OLD STAKES TO REMOVE.	NO
MANY SURFACE ROOTS.	NO

SHOW OVERHEAD WIRES. ≡
SHOW SIDEWALKS.
SHOW LIGHTS. ☐
SHOW LANES.
SHOW TREES ON INSIDE BLVD. ●

APPENDIX 46.

Some Examples of Work by other Municipalities in Compiling Comprehensive Tree Inventories

MARKING THE MAP

Classification

T Single trees should be drawn as a dot with a circle around beside which should be placed the code letter 'T' with appropriate number (e.g. T1, T2, etc.). Make sure the dot is accurately positioned.

A Areas or linear belts of trees and hedges with significant trees (too many to list singly). These should be shown on the map by dots outlining the area with the code letter 'A' alongside with the appropriate number.

G Groups of trees should be shown by a surrounding broken line with the code letter 'G' and appropriate number alongside.

W Woods. As many species as possible should be named. Outline the area and label with the code letter 'W' with the appropriate number.

H Hedges without trees. These should merely be marked on the map with a pecked (wwww) line.

See the map for examples of the above.

EXAMPLE

O.S. Map No. (and Grid letters and nos. where given) Date of survey

Tree No.	Species	Approx. height	Circumference at breast height	Category	Comments
T 4	Oak	50 ft	8 ft	A	Beautifully shaped, well known landmark
T 5	Horse Chestnut	80 ft	9 ft	C	Excessive dead wood; poor leafing. Large cavity at 20 ft
T 6	Elm	70 ft	8 ft	D	Almost dead
A 10	Hazel hedge with Ash, Oak, Yew trees	40 ft max	4 ft av	B	Some promising young Oaks
A 11	ditto	ditto	ditto	B	Yews becoming dominant
G 1	Beech	60 ft av	8 ft	A/C	11 mature Beeches; 6 of them in poor condition

NOTES

Species If you cannot identify the species, put a question mark and try to get a further opinion.

Height Estimate the height of a tree by simple trigonometry or by multiplying the height of a person standing against it.

Age The age of most mature trees can be assessed at approx. one year per inch circumference.

Circumference Usually measured at a point 4 ft above ground (breast height).

Disease Any sign of fungus on or around a tree must cause concern and abnormally late leafing in the spring or early leaf fall in the autumn indicate decline in a tree's vigour. If in doubt, obtain an expert opinion. It is essential to examine each tree carefully, however difficult the access (for example, heavy growths of Ivy can hide serious defects).

Boundaries The boundaries of Areas and Groups of trees, and Woodlands, should be accurately marked. If a hedge, wall or fence exists, this ought to constitute the boundary. Where there are no suitable physical boundaries, a notional line should be drawn about 10 ft beyond the trunks of the outermost trees.

MEMBER ORGANISATIONS OF THE TREE COUNCIL

Arboricultural Association
Association of District Councils
Association of Professional Foresters
British Association of Landscape Industries
Civic Trust
Council for the Protection of Rural England
Country Landowners Association
Farming and Wildlife Advisory Group
Home Timber Merchants' Association
Horticultural Trades Association
Institute of Foresters
Institute of Landscape Architects
Institute of Park and Recreation Administration
Men of the Trees
National Farmers' Union
National Federation of Women's Institutes
National Trust
Royal Forestry Society
Royal Institution of Chartered Surveyors
Royal Town Planning Institute
Timber Growers' Organisation
Trees for People

OBSERVERS

Association of County Councils
Council for Environmental Education
Royal Horticultural Society
Countryside Commission
Forestry Commission
Department of the Environment

' February 1975. Published by The Tree Council.
Printed by Headley Brothers Ltd, London and Ashford, Kent.

THE NATIONAL TREE SURVEY

Issued by

The Tree Council
Room C10/13,
2 Marsham Street,
London SW1P 3EB

MAKING A TR SURVEY

This leaflet, issued by The Tree Council and based upon a publication of The Council for the Protection of Rural England, is designed to show you how to take part in the National Tree Survey.

The National Tree Survey, launched in 1975, is intended to harness the goodwill of tree-lovers everywhere into a massive practical exercise: the surveying of all trees throughout the country. In this way we can best conserve our existing trees and find out where tree-planting priorities should lie. Trees are too valuable to waste and therefore we must not only encourage more planting, but ensure that those planted are of the right type in the right place. Your survey will be invaluable in achieving this.

It is vital that those participating in this ambitious and worthwhile programme should carry out their work accurately and uniformly. Duplication of effort must be avoided and liaison with your District Council is essential. Before you undertake a survey, we suggest the following course of action:

1. Read this leaflet carefully (to ensure your participation is effective)
2. Contact your local District Council (they will know which areas need surveying)
3. Carry out the survey in the way suggested (and remember to get the necessary permission and co-operation of owners of land).

When you have completed the survey, make sure one copy is deposited with your District Council. Send a second copy to The Tree Council so we can build up a national archive. Also, suggest to your Parish Council (where appropriate) that they should study a copy, as they will want to consider future planting.

THE OBJECTIVE

To establish a national record of the number, species and condition of amenity trees and reveal sites particularly suitable for future tree-planting. The survey is also intended to include trees in hedgerows, shelter belts, groups of trees and small woodlands (up to 1 hectare or $2\frac{1}{2}$ acres) and will provide information for the assistance of the local authority, farmers, foresters and conservationists.

THE SURVEY

Surveying is best carried out by two people, preferably living in or near the area. It should be undertaken when deciduous trees are in leaf – generally between mid-May and the end of October.

EQUIPMENT REQUIRI

1. *Two grid system Ordnance Survey maps.* Scale 1:2500 (25 inches to mile) is recommended. One map for use in the field; the duplicate for preservation as a master copy. It is most important that the map number and date is clearly recorded.
2. *Clip board with loose leaf sheets.* It is an advantage if the board has a plastic cover (to protect the survey sheets in wet or windy weather).
3. *Tape measure* (preferably of the timber measuring kind).

A book such as *A Field Guide to the Trees of Britain and Northern Europe* by A. F. Mitchell, published by Collins, will be useful for identification purposes.

RECORDING

The trees should be recorded under the following code headings and numbered:

Classification	*Code*
Single trees	T
Areas or linear belts of trees and hedges with significant trees	A
Groups of trees	G
Woods	W
Hedgerows	H

RECORDING SHEET

Each recording sheet should be laid out as shown with the following details:

Code letter and tree number
Tree species
Approx. height
Circumference at breast height
Category
Comments

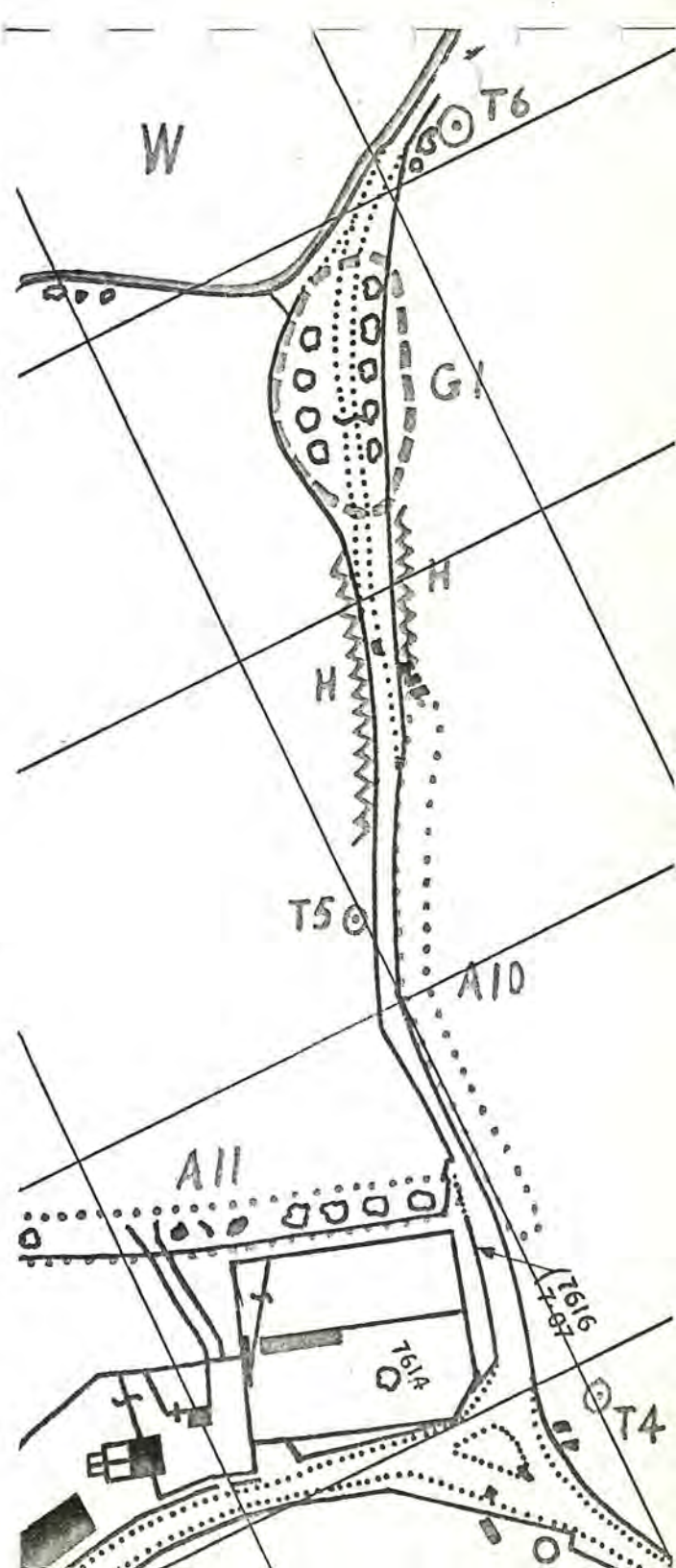
For the purpose of the survey, trees are divided into three simple categories: A, B, or C.

A = Good specimens of individual or groups of trees, well situated and enhancing their surroundings. These trees must be healthy, well-shaped and showing no sign of die-back or fungal infection. Rare species and trees of special local or historical interest should be noted.

B = Normal specimens.

C = Poor specimens, e.g. mis-shapen, stunted or with excessive dead wood.

D = Dead, dying or dangerous trees.



THE CITY OF EDINBURGH—ITS STOCK OF TREES: A CONTINUING AMENITY AND TIMBER RESOURCE

By F. T. Last, J. E. G. Good, R. H. Watson* and D. A. Greig
Institute of Terrestrial Ecology, Bush Estate, Roslin, Midlothian and Department of Forestry and Natural Resources, University of Edinburgh

Summary

Sampling in 1972 suggested that there were about one million trees within the city of Edinburgh (about 14,000 ha): 84% were in gardens and the rest were equally distributed between streets and parks. The most numerous trees in descending order of frequency were apple (domestic), lilac, cherry, sycamore, rowan, cypress, apple (crab), beech, laburnum and birch.

Numbers, size-class distribution and species composition were affected appreciably in residential areas by a social factor, the percentage of owner occupiers. Numbers and basal areas increased to 115 per ha and 2·13 m²/ha with increasing percentage owner-occupancy. The proportion of apples (domestic and crab), birch, cypress and laburnum also increased but those of elder and lilac decreased. Excepting those of the latter two trees, which seem to be relatively unaffected, populations of the differing types contained relatively few large specimens in areas where few homes were owner-occupied.

There were relatively more "woodland" trees in streets and parks than in gardens, with a greater abundance of whitebeam, hawthorn, lime, elm and pine.

A preliminary assessment suggested that it might be profitable to include "utility" as an objective when developing a management plan to sustain this resource primarily for amenity. Diameters of a high proportion (35%) of park trees exceeded 30 cm but only 5% of those in residential localities.

Introduction

Much has been written in recent years of the contribution of trees to the urban environment (Crowe, 1963; Tandy, 1972 and White, 1973) but as yet the production foresters concept of "managing to sustain" has not been widely applied. In arboricultural practice the emphasis has, for understandable reasons, been focussed on tree preservation but if our landscape and environment are to be maintained and advanced, attitudes must rapidly change. There are already many clear indications of change such as the desire to have schemes for ascribing value to prize trees in prominent positions. People are concerned by the landscape changes wrought by hedgerow removal as a result of land use rationalisation, by the voids created by the killing attacks of the current aggressive strain of *Ceratocystis ulmi* (Buisman) C. Moreau, the cause of Dutch elm disease . . . These latter events have heightened awareness and receptivity to the need for managing the resource of amenity trees and at the same time the possibilities of worthwhile production of timber should not be ignored. But before preparing a plan it is first necessary to categorise the resource. To provide this baseline and to gain some idea of the existing resource for interest alone, a survey was made of the City of Edinburgh during 1972.

* Present address: Department of Recreation and Leisure, Midlothian District Council, Council Offices, Loanhead, Midlothian.

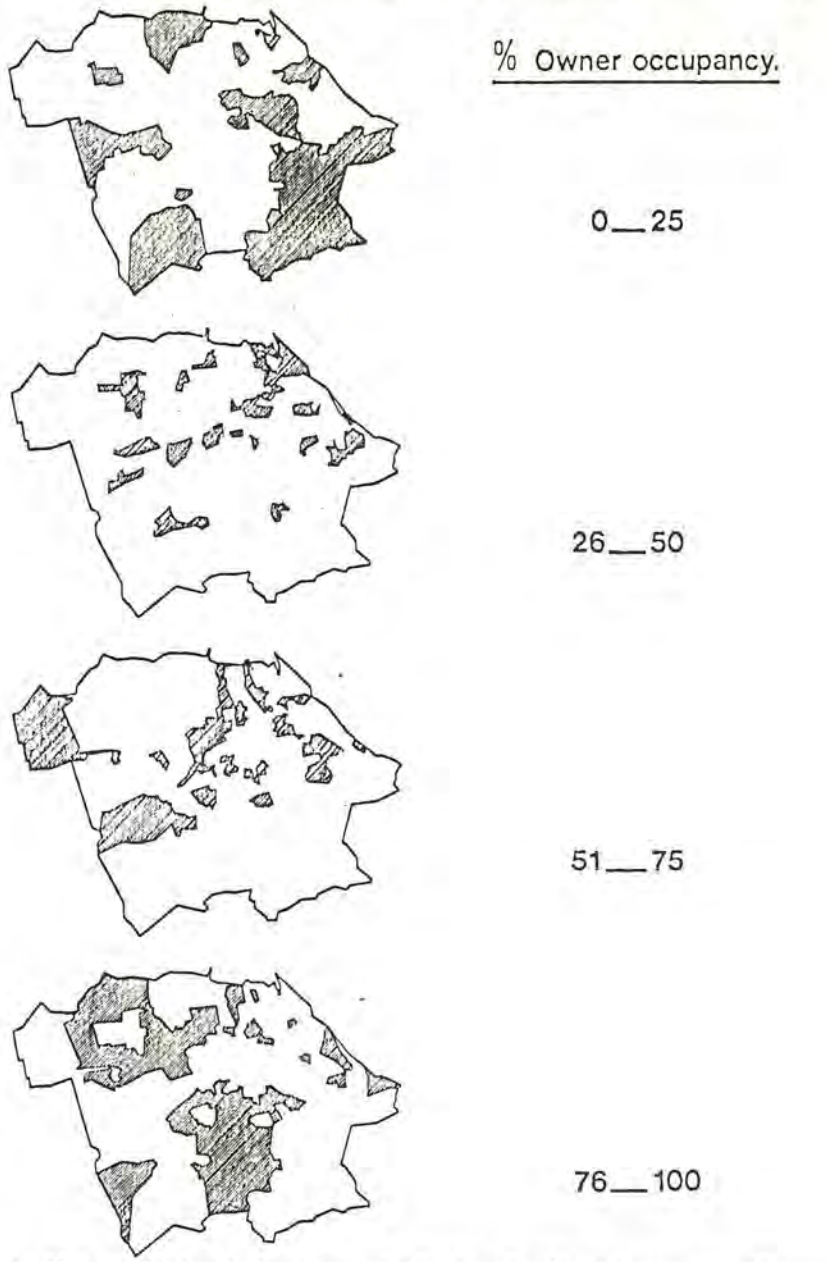


Fig. 1 Maps of Edinburgh showing the distribution of residential areas with different percentage owner occupancies.

The results of this survey and of a second done in 1975 are given in this paper. The first was concerned with species, numbers and sizes; the second with the utility of the resource.

Site selection

The City of Edinburgh was considered in two parts, residential and non-residential.

(a) RESIDENTIAL. During an initial cursory survey it seemed that the distribution of trees was not strongly related to the normally accepted factors of soil type, exposure, aspect . . . but was, instead, overwhelmingly influenced by social considerations. With this in mind the residential area of Edinburgh was divided by house owner-occupancy into four categories using data from the 1966 census (H.M.S.O., 1968). Areas with 0–25, 26–50, 51–75, 76–100% owner-occupiers were mapped using a computerised mapping system (Waugh, 1973) (Fig. 1). Twelve localities were selected at random within each of the four housing categories to give a total of 48 samples (Appendix A). After marking these localities on street plans, sample areas, not less than two and not more than seven ha and delimited by convenient roadways, were identified (Fig. 2*a*). In the event total areas surveyed within each housing category ranged from 45 to 55 ha. Only 0·8% of the 0–25% owner occupancy category was surveyed

TABLE 1

SURVEY DETAILS OF RESIDENTIAL AREAS WITHIN THE CITY OF EDINBURGH WITH DIFFERENT HOME OWNERSHIP PERCENTAGES

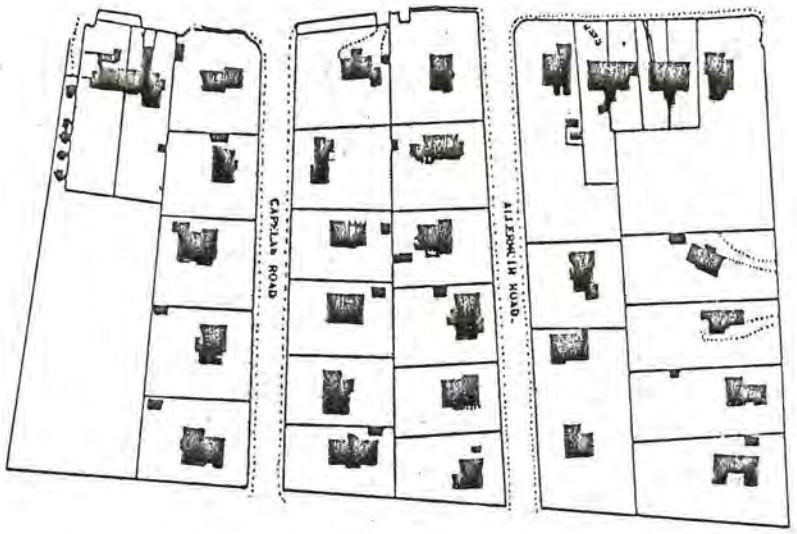
	% house owner occupancy				
	0–25	26–50	51–76	76–100	Total
Total area within confines of Edinburgh (ha)	6,068	1,882	3,167	5,226	16,343
Area surveyed (ha)	46·5	45·3	45·7	54·7	192·2
Area surveyed as percentage of total	0·8%	2·4%	1·4%	1·1%	—

rising to a maximum of 2·4% in the 26–50% category (Table 1). With hindsight, it is recognised that these proportions are less than ideal for estimating absolute numbers of tree per ha. On the other hand the twelve replicate areas within each housing category were sufficient for the detection of significant effects of home ownership.

(b) NON-RESIDENTIAL. Excepting cemeteries, private parks, and public utilities, non-residential areas of Edinburgh were identified on 1/24000 scale aerial photographs (Meridian Air maps, 1971), measured and allocated to one of five classes:

(i) tree-lined parks where trees are restricted to the perimeter and/or verges alongside roads;
(ii) open parks where the few trees are small;
(iii) golf courses where the few trees, like those in open parks, are small;
(iv) parklands where trees are open-grown and scattered;
(v) woods where the many trees create a woodland character.

ⓐ Street plan.



ⓑ Completed survey form.

SPECIES / DBH SIZE CLASS DIAM	CHERRY	APPLE	LABURNUM	CYPRESS	SYCAMORE	ROWAN	HOLLY	LIME	BEECH	SPRUCE	MALUS	HAWTHORN	LILAC	BIRCH	ELDER	OTHERS	TOTAL
0-10	56	44		39	14	37	35	5	2	23	28	6	40	10	16	79	446
10-20	12	20		32	8	24	14	24	6	1	18	14	4	5	3	26	224
20-30	8	2	4	4	1	5		9	3		2	2		8		10	56
30-40	7			2	4	1		8	2					9		14	45
40-50	3				3			1						3		5	15
50-60					2				2							9	13
Over 60					3				3							3	9
TOTAL	86	68	29	77	35	67	49	45	18	24	48	22	44	33	19	146	808

Fig. 2 Sample street plan and form used when surveying trees in the city of Edinburgh.

Complete enumerations were made of 17 sample areas some of which are mentioned in the Open Space Plan for Edinburgh, 1969 (Table 2). In total 197 of 929 "non-residential" ha were observed—a 21% sample.

TABLE 2

OCCURRENCE OF TREES IN SOME "NON-RESIDENTIAL" AREAS OF EDINBURGH

Designation and sizes of areas sampled		Numbers of Trees Total	Numbers of Trees per ha	Mean nos. of trees/ha	Total area of category in Edinburgh	Estimated total numbers of trees in each category
I. Tree-lined park						
(i) Bruntsfield Links	14·2 ha	478	34			
(ii) Inverleith Park	24·7 ha	1,427	58			
(iii) Leith Links	20·2 ha	500	25	40	192·2 ha	7,700
(iv) St Margarets	3·4 ha	220	65			
(v) Saughton Park	19·0 ha	487	26			
(vi) Union Park	4·1 ha	141	34			
II. Open park						
(i) City Park	1·4 ha	2	1			
(ii) Gyle	26·3 ha	180	7			
(iii) Pilton Park East	2·4 ha	35	15	16	249·1 ha	3,900
(iv) Powderhall	2·0 ha	24	12			
(v) Redbraes	1·0 ha	43	43			
III. Golf courses						
(i) Carrick Knowe	40·4 ha	1,177	29	29	235·9 ha	6,800
IV. Parkland						
(i) Princes Street Gardens East	3·6 ha	244	68			
(ii) Princes Street Gardens West	11·3 ha	2,040	181	110	138·4 ha	15,000
(iii) Royal Terrace Gardens	4·2 ha	349	83			
V. Wood						
(i) Hermitage of Braid	18·2 ha	4,936	271			
(ii) Rocheid Path	0·7 ha	399	570	420	113·7 ha	48,000
TOTALS	197·1 ha	12,682			929·3 ha	81,000

Enumeration

Trees, which for the purpose of the present study were defined as perennial woody plants with main stems taller than 1·8m (6 feet), were identified into one of 53 categories mostly referring to single species, but, in some instances, species of the same genus were grouped: there was a miscellaneous category accounting for about 0·2% of the total number of trees surveyed (Appendix B).

In the survey done in 1972, species and diameters at breast height (1·3m) were recorded on a standard survey form (Fig. 2). In the second survey made in 1975 the emphasis was switched to an assessment of utility. Trees with diameters greater than 30cm were put in one of three categories:

(i) *not-utilisable*, if less than 1·8m of clear stem, if stem form was very bad (fluting, twisting, buttressing . . .), if evidence of microbial decay . . .

(ii) *utilisable*, if 1·8m or more of clear stem without major defects of the type described for non-utilisable, and,

(iii) *good quality*, if 1·8m or more of clear stem without defects.

These assessments were made in ten of the non-residential areas excluding "open parks" and golf courses (see Table 2) and in 36 street areas.

Estimates, in contrast to actual counts, have usually been rounded to two significant figures. In adopting this procedure some minor inconsistencies have inevitably been incurred.

Results

(a) NUMBERS OF TREES. As anticipated numbers of trees per ha were strongly influenced by social factors. They increased in residential areas from 20 where home ownership ranged from 0–25% to 115 where most

TABLE 3

EFFECTS OF HOME OWNERSHIP ON THE DISTRIBUTION OF TREES IN RESIDENTIAL AREAS OF EDINBURGH

	% house owner occupancy			
	0–25	26–50	51–75	76–100
Mean numbers of trees/ha	20	35	52	115
Proportion of trees in:				
(i) gardens	77%	85%	84%	99%
(ii) streets	23%	15%	16%	1%

houses were owner occupied (Table 3). When recording in these localities trees were separately apportioned to streets and gardens. The data indicate that street trees are a major factor where few houses are owner occupied and of relatively little importance at the other end of the scale, the proportion of street trees decreasing from 23 to 1%.

Extrapolating from actual numbers in sample areas and making due

allowance for the differing areas of the four owner occupancy categories, it seems that numbers of trees in the streets and gardens of Edinburgh approximate to 71,000 and 820,000 respectively. To these totals a further 81,000 should be added—a possibly conservative estimate of the contribution made by trees in non-residential areas. In total, therefore, the survey gave an estimate of approaching one million trees within Edinburgh. Experience of Forestry Commission censuses and of surveys done by us in the remaining districts of the Lothian Region suggests, however, that these estimates are subject to errors of about 25% *i.e.* 1,000,000 ± 250,000.

Résumé of estimated numbers of trees within the City of Edinburgh:

	Gardens	Streets	Parks and open spaces	Total
	820,000	71,000	81,000	970,000
Proportions of Total	84%	7%	8%	

Interestingly there were many more trees in some residential areas than in some devoted to recreation although the latter category varied greatly. Thus numbers ranged from 16/ha in open parks to at least 270/ha in wooded situations; the figure of 573/ha for Rocheid Path, however, tending to suggest overcrowding. Perhaps surprisingly, there were nearly as many trees in the streets of Edinburgh as in its parks and open spaces, 7 and 8% of the total, but these were out-weighed by numbers in residential gardens which accounted for 84% of the total.

(b) SPECIES COMPOSITION. The ten commonest types of tree account

TABLE 4

ESTIMATED NUMBERS OF THE TEN COMMONEST TREES GROWING IN EDINBURGH

Apple, domestic	140,000
Lilac	88,000
Flowering cherry	66,000
Sycamore	65,000
Rowan	56,000
Cupressus	45,000
Apple, crab	44,000
Beech	41,000
Laburnum	40,000
Birch	37,000

for 64% of the total population in Edinburgh (Table 4). Of them, the domestic apple was the most abundant, followed by the ornamental lilac and cherry before reaching sycamore, rowan and cypresses. Within the top ten there were only four widely regarded woodland/forest representatives *viz.* sycamore, rowan, beech and birch. However, there are major differences between garden, street and park situations. Because of the over-riding contribution made by garden trees it is not surprising that the garden list is nearly identical with the general list. However, with the virtual absence of domestic apples and lilac from streets and parks,

types such as whitebeam, hawthorn, lime, elm, ash and pines assume greater significance (Streets—sycamore (18%), whitebeam (13%), cherry (13%), hawthorn (13%), crab apple (5%), lime (5%), rowan (3%), birch (3%), holly (3%) and elm (3%); Parks—elm (25%), sycamore (24%), whitebeam (8%), ash (6%), privet (5%), lime (4%), beech (4%), pine (3%), cherry (3%) and hawthorn (2%)).

As can be seen, two types, elm and sycamore, account for nearly 50% of park trees, a feature of particular importance and concern bearing in mind the damage being wrought in England and Wales and recently noted in Glasgow, by the aggressive strain of *Ceratocystis ulmi*, the cause of Dutch elm disease. The different types of tree were more evenly distributed in streets and gardens; it needed six and seven respectively, of the most numerous types in these situations to equal the same proportionate contribution made by elm and sycamore in parks.

The species composition of garden populations were affected conspicuously by % home ownership—effects on absolute numbers have already been mentioned. Thus the percentages of elder and sycamore, which were important in the 0–25% category decreased with increasing % home ownership. On the other hand the trends with apples (domestic and crab), birch, cypresses and laburnum were in the reverse direction; these trees were relatively abundant in the higher ownership categories but virtually absent elsewhere.

(c) SIZES AND SIZE-CLASS DISTRIBUTION. Effects of owner occupancy on the basal areas of garden and street trees, a measure of visual impact, parallel those on numbers per ha, but instead of ranging by a factor of ×6 it varied by ×10 from 0·20m²/ha in the 0–25% owner occupancy category through 0·35, 1·14 to 2·13 in the 76–100% category. For statistical analyses the basal areas "n" were transformed to log (100n + 1) giving means of 0·98, 1·28, 1·87 and 2·14 ± 0·164 respectively. These differences are partly attributable to differing numbers of trees but additionally they are related to contrasting size-class distributions which in turn, reflect, to some extent, species composition (Fig. 3).

Irrespective of where they occurred elder and lilac (group A) did not exceed a breast height diameter of 20 cm; apple, hawthorn and rowan (group B) were never larger than 50 cm whereas some specimens of ash, beech and sycamore (group C) were greater than 60cm—the largest surveyed birch and cherry had diameters of 51–60cm. Thus in the 0–25% home ownership category, with relatively large numbers of elder and lilac, basal areas per ha will predictably be small. Interestingly the size distributions of these two trees, unlike those of others, were identical in the four housing categories suggesting that they are tolerant of a diverse range of environments some more subject to human interference than others. In contrast the diameter of 8·2% of group B trees exceeded 20cm in gardens of the 51–100% house owner category but only 2·0% exceeded this size in the 0–50% group. The comparable figures for group C trees in excess of 30cm are 20·7 and 5·7%.

Whereas 63% of street and garden trees were less than 10cm in diameter,

60% of park trees measured more than 10cm with 35% exceeding 30cm. Only 5·4% of garden trees exceeded 30cm. In summary, the percentage distributions were:

Résumé

	Diameter (cm) at breast height						
	0–10	11–20	21–30	31–40	41–50	51–60	>60
Streets and gardens	62·8	25·3	6·5	2·8	1·4	0·8	0·4
Parks	40·3	15·2	9·6	12·0	9·1	6·3	7·5

These means conceal considerable variation. For instance the size-class distribution of trees in West Princes Street Gardens suggests a sustaining population but that for Leith Links Park shows a major deficiency of young trees (Fig. 4). Reverting to the five types of non-residential areas it seems that open parks and golf courses have basal areas of about 0·1–2·0m²/ha; tree-lined parks, 3·0–6·0m²/ha; parklands, 6·0–18·0m²/ha; woods, in excess of 18m²/ha.

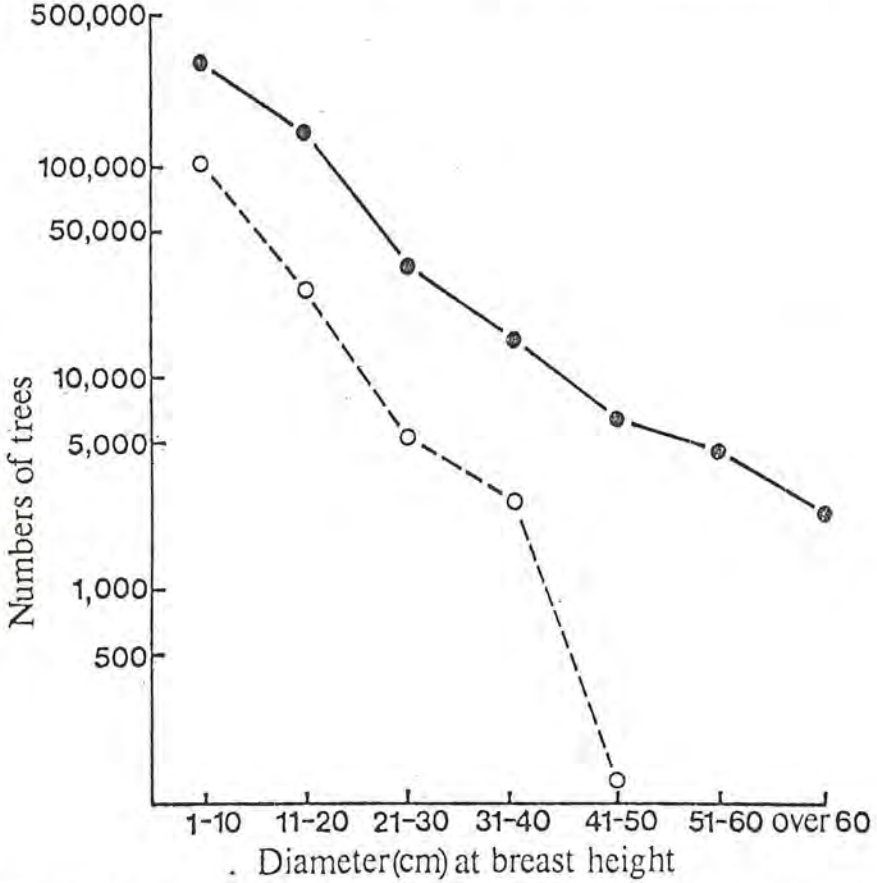


Fig. 3 Size-class distributions of trees growing in residential areas of Edinburgh with 0–25% (o- - - -o) and 76–100% (●—●) home owners (1972).

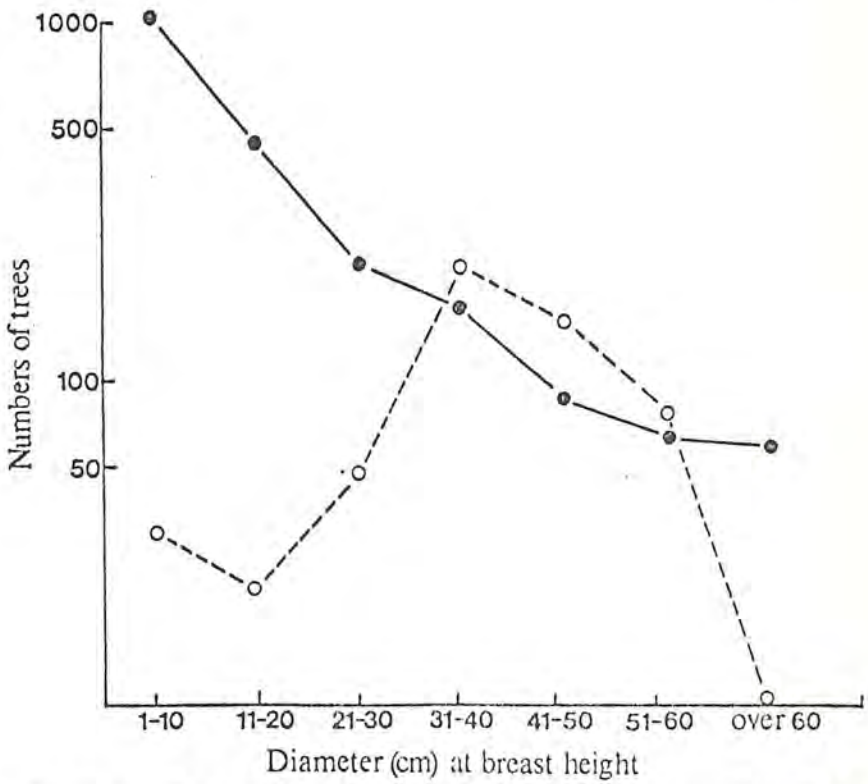
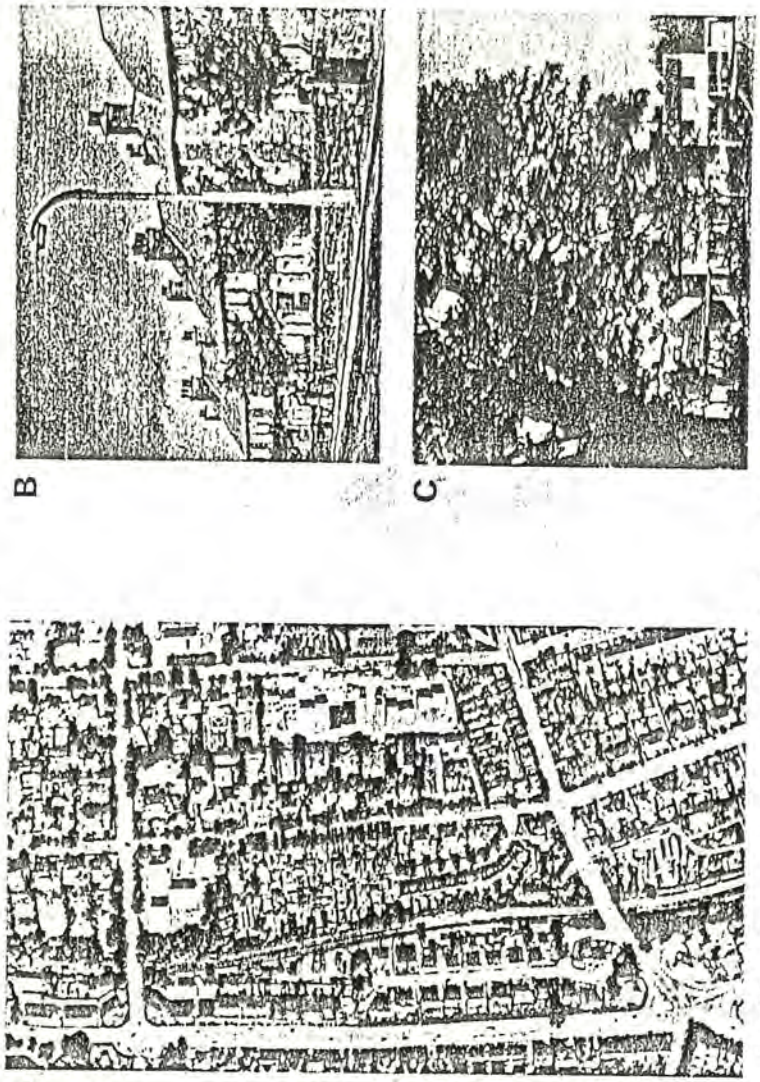


Fig. 4 Size-class distributions of trees growing in West Princes Street Gardens (●) and Leith Links Park (o), within city of Edinburgh (1972).

(d) UTILITY. The criteria adopted for this study indicate that most trees with diameters in excess of 30cm were utilisable: 11–14% were of good quality and 11–13% were not utilisable. There were differences between "non-residential" localities with consistently fewer good quality trees growing in tree-lined parks, presumably a reflection of management. Although not generally considered to be good "town-trees," ash, beech and oak yielded many good quality specimens. Surprisingly, roadside environments did not seem to affect quality adversely (Table 5).



A series of three photographs illustrating the distribution and impact of trees in different districts of Edinburgh.
A. Aerial photograph of area just north of Blackford Hill.
B. A section of Redford Road near the Braid Burn.
C. Old Farm Avenue.
B and C were photographed by Mr J. Proctor.

TABLE 5

PROPORTIONS OF TREES GROWING IN STREETS AND NON-RESIDENTIAL AREAS OF EDINBURGH WITHIN EACH OF THREE UTILITY GRADES

	Numbers of trees in sample*	% in utility grade		
		Not-utilisable	Utilisable	Good Quality
I. NON-RESIDENTIAL AREAS including PARKS				
All types	3,660	11	78	11
Individual types				
Ash	200	5	76	19
Beech	127	13	61	26
Elm	1,323	11	83	6
Lime	263	17	60	23
Oak	124	20	61	19
Sycamore	1,109	7	82	11
Whitebeam	156	6	78	16
II. STREETS				
All types	722	12	74	14
Individual types				
Elm	355	9	69	22
Lime	111	28	71	1
Sycamore	112	6	88	6

* Only trees greater than 30 cm diameter were assessed.

Discussion

This first comprehensive survey has shown that there is a large resource of trees in terms of both amenity and timber in Edinburgh; a situation that doubtless exists in countless other cities. Garden trees, although generally smaller, are more important numerically than street and park trees and their greater species diversity adds to amenity and wild life interest. Amenity can also be related to size but in this instance much depends on siting and scale. A large tree in a small garden could be argued to have no amenity to the owner but a considerable value to the locality. These considerations are of more than passing interest if trees are to be managed according to plans, more or less formalised, to sustain "landscape" values and allow the growth of other plants in residential gardens. In terms of production the high proportion of large trees among the relatively few occurring in parks equalled the low proportion among the numerous trees in residential localities.

The close inverse relation between numbers and sizes of trees, and percentage owner occupancy suggests that owner occupiers might be more favourably inclined to tree planting and management, than tenants, who may be inhibited by lease agreements, by available space . . . Interestingly the survey indicated that elder and lilac grew equally well in all localities of Edinburgh. Perhaps this should have been interpreted to read . . . elder and lilac were allowed to grow equally well in all localities . . . possibly suggesting that they tolerate vandalism.

The present survey is only one part of the essential information required for developing a management plan. It needs to be supplemented by studies of the age/size relations which are known for our forest trees but, despite the pleas of Sir Robert Christison (1878) when an officer of the Royal Society of Edinburgh, are still largely unknown for trees in amenity situations. Information of this type would enable predictions of recruitment from one size-class to the next to be made. But, even without this information it is obvious that the size-class distribution of trees in parks such as Leith Links needs to be restructured if amenity is to be maintained. Additionally the existing survey has highlighted the disturbing fact that elms, largely *U. glabra* (Wych elm), account for 26% of all Edinburgh trees with diameters greater than 30cm. Bearing in mind the spread of the aggressive strain of *Ceratocystis ulmi*, a major component of the Edinburgh landscape could be at risk. But for the future should we not attempt to increase diversity? Are there "new" trees available whether other species or variants within a species?

The production and selection of appropriate planting stock is part of good management and the demand for woodland/forestry trees and those produced by the hardy-stock industry, suggests that urban foresters and their advisers should be able to bring together horticultural and silvicultural interests. For the future, a plan to sustain should attempt to reconcile many interests—amenity, wildlife and production. With planned successional and suitably diversified plantings it should be possible to lessen the emphasis on tree preservation and move further towards conservation. In turn conservation should not conflict with the concept of production forestry which could be useful in times of shortage even in an urban setting. The production of a management plan reconciling these differing objectives should be attempted.

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APPENDIX A

RESIDENTIAL AREAS OF EDINBURGH SURVEYED: LISTED BY HOME OWNERSHIP CATEGORY

		ha
0–25%	Calder Place (Sighthill)	4·34
	Craigmillar	4·29
	Drum Brae	5·60
	Gorgie I (Hutchison)	3·87
	Gracemount	3·62
	Greendykes	2·64
	Leith Shore	3·49
	Lochend	3·53
	Moredun (Craigour)	3·05
	Saughton Mains	4·66
	Stevenson Drive	3·56
	Wardieburn	3·89
	Total	46·50
26–50%	Carricknowe	2·83
	Comiston	3·50
	Constitution Street	4·02
	Crewe Toll	4·41
	Duddingston	6·11
	Easter Road	2·24
	Gorgie II (Moat)	3·44
	London Road	3·06
	Oxgangs	4·54
	Portobello I (Pipe Street)	2·23
	Portobello II (Mount Lodge)	4·56
	Sighthill II	4·34
	Total	45·30
51–75%	Craiglockhart	3·72
	Dean	1·54
	Juniper Green	2·98
	Morningside	5·27
	Mountcastle	2·89
	Murrayburn	4·38
	Newhaven	3·50
	Newington Station	4·34
	Piershill	4·58
	Roseburn	4·99
	Seafield	3·55
	Stockbridge	3·94
	Total	45·70
76–100%	Barnton	7·06
	Colinton	4·80
	Corstorphine	5·37
	Craigentinny	4·69
	Craigleith	2·41
	Dudley	3·58
	Fairmilehead	4·92
	Grange	4·79
	Greenbank	5·17
	Greenhill	3·24
	Priestfield	5·06
	Silverknowes	3·57
	Total	54·70

CITY OF AKRON STREET TREE INVENTORY

The Forestry Division of the Akron, Ohio, Parks and Recreation Department, contracted with Asplundh Environmental Services to design and supervise developmen of a comprehensive street tree management system for the city. The project included three phases: 1) complete street tree inventory (approximately 50,000 trees); 2) computerized data storage and reporting system; and 3) training in use and maintenance of street tree management system.

Drawing from street tree inventory experience in Carmel, California, and Ann Arbor, Michigan, Asplundh's project team developed an approach which would meet the specific needs of Akron's (population 240,000) street tree program, and also included several related street elements which were influenced by street trees. Labor for the inventory was provided through a cost-sharing CETA program; a two-week intensive training period was conducted by the project team and continuous on-site direction was provided by an AES technical representative. Use of the CETA program was considered very successful, with a number of the surveyors retained by the P&R Department for positions after completion of the inventory.

The inventory was address-specific, and recorded 13 tree condition descriptors, useful in maintenance planning; seven additional site descriptors recorded factors related to safety of pedestrians, traffic, utilities, and private property.

An existing computer program, with proven application, was selected for use. Inventory data was stored in the computer facilities of Wayne State University in Detroit, whose system is specifically geared to cost-efficient use by governmental units. Access to the data and program will be via an interactive terminal located in and operated by the Akron P&R Department. A local Akron Telenet number will be dialed for immediate access and response. Information retrieval capabilities range from simple call-up of a specific tree at a specific address, to sophisticated summary reporting for use in planning, budgeting, maintenance scheduling, and numerous other aspects of street tree management.

After a development period of nine months, including the summer inventory, the city forestry staff was trained in the operation and mechanics of the data system. Updating procedures and long-term maintenance needs were summarized in an operational manual, and the system management was transferred entirely to the city. A complete capabilities report was prepared, which included technical assistance resources and general concepts of how the data system could be periodically purged and overhauled, merged with other city data systems, and utilized by the local electric utility in line maintenance.

A primary objective of AES in this project was development of an economical, practical management system designed for the particular needs of Akron. This approach extends into all urban forestry projects undertaken by AES, with each individualized project providing a wider range of experience for future services to urban communities.

Development of the Akron street tree data system was highlighted by three important factors which made it successful:

* Cost-sharing CETA personnel were utilized
* An existing computer system was used
* The field inventory was completed in one summer season and on schedule

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Computerized Tree Inventories for Municipalities

National Urban Forestry Conference
November 1978
Washington, DC

Abstract

The author's firm is believed to be the first to have commercially performed computerized tree inventories for municipalities. In tailoring this service to client needs the author has found ways to optimize the usefullness and cost-effectiveness of urban tree inventories.

An estimated 3 to 5 percent of US municipalities use computerized tree inventories, and probably under 20 percent use any type of systematic inventory of available planting sites or street and park trees, and the recurring and non-recurring maintenance needs of these trees. Most cities and towns manage urban forests by the inefficient and inadequate crisis management system, responding primarily to complaints and emergencies.

Tree and planting site inventories allow municipalities to more accurately define urban forest needs. Inventories can minimize cost per unit of work by allowing for clustering of physical operations. Non-emergency but required maintenance can be routinized, ensuring for instance that scattered new plantings will be watered. It becomes possible to measure problems and test remedies. Maintenance can be better targeted only to trees in need. Scheduling, budgeting and other urban forest management tasks can be simplified through use of a computerized inventory. Municipal liability can finally be reduced through better and more rapid maintenance of hazard trees.

Computerized inventories can be cost-effective for as few as 2000 trees, and may be repeated on cycles as long as three to seven years. 1978 inventory costs including computerization can range from $.75 to $1.50 per tree at full cost accounting.

Critical steps in undertaking an urban forest inventory are:

- o discussion with municipal urban forest manager (and public) to determine goals and physical and financial resources available
- o present and expected municipal needs should then determine what types of data should be gathered; data parameters should be agreed upon
- o design and preparation of data gathering forms or devices for field use
- o training and oversight of any in-house or volunteer field personnel employed to reduce data gathering costs
- o determine form in which data is to be stored: hard copy, IBM cards, magnetic tape, etc
- o determine computer sorts and programs initially required

- o interpretation of data sorts
- o determination of method by which inventory will be kept up to date with completed plantings or maintenance.

Federal urban forestry policymakers are urged to support development of a hand held tape machine for direct entry of inventory field data into computers. A public urban tree data bank based upon municipal inventories is also recommended.

James M Rubens
Urban Forestry Consultant
147 South Main Street
White River Junction, Vermont 05001

Phone 802-295-9186

Planning for Computerized Street Tree Inventories

Properly designed and executed tree inventories can give urban forest managers exact information on the condition of public shade trees. Exact information about maintenance requirements and estimated costs, and about planting needs can also be obtained. At budget time exact information is more convincing that guesstimates. Inventories also allow limited funds to be allocated objectively. Management decisions can be made quickly and accurately, and municipal liability can be controlled through more timely maintenance of hazard trees.

Computerization of inventories makes datamore quickly and easily available. More importantly, computerization provides the urban forest manager with a means to sort out or list all trees or planting spaces sharing a common characteristic. This means that print outs of locations of all transplants needing watering, or all trees with urgent deadwooding needs can be generated. Or multiple data sorts identifying American elms of high specimen value and located within central areas can yield a priority Dutch Elm Disease control listing. Simple programming can allow direct print out of work orders or bidders documents, resulting in large administrative time savings.

Once the need for a tree inventory has been established, decisions should be made concerning funding sources and concerning consultant versus in-house performance. Current Cooperative Forest Assistance Act funds are available in many states on a matching basis to perform inventories. Information on these matching grants can be obtained from State Foresters' offices.

Municipalities with an experienced urban forest manager, at least one highly trained arborist, and with available computer and programmer time can accomplish the entire inventory job in-house. An outside consultant can be retained to perform the entire inventory and computerization, to perform computerization only, or to provide planning and training services to allow for completion of a cost-effective in-house job.

The tree inventory is the foundation of a well managed urban forest; so, decisions concerning who should perform the inventory and how it should be accomplished must be made after careful evaluation of alternatives. To assist in that evaluation, our firm is happy to provide detailed information concerning costs, options and inventory benefits.

The first step in planning for a useful inventory is to decide what types of information should be gathered for which trees or planting sites. There are hundreds of types of potentially useful information, and a number of different parameters or scales which can be used to measure each. For instance should tree height be measured, and if so how accurately. Consider that too much information is possible and will increase costs.

No two municipalities are alike, so to be useful and inventory must be pre-planned around specifics including:

- what is municipal policy concerning the various off right-of-way tree species?

- what are the capabilities of municipal tree maintenance personnel and their equipment?
- how are tree locations to be permanantly identified?
- what is the current and expected level of sophistication and financing of the municipal tree program?
- how much planting can be expected when, by whom, and in what regions of the city?
- what diseases and pests are apt to be found?
- or, an important question for smaller inventories, do we need computerization?

An inventory is no better than the usefullness of the information being gathered and no better than the skills of persons inspecting each tree and gathering data. A truly usefull inventory should allow the urban forest manager to make the bulk of decisions concerning maintenance and planting of most trees—without requiring reinspection of all or most trees. Only arborists with considerable diagnostic skill should gather data. Diagnosis of the need for cabling, for instance, requires knowledge concerning proneness to breakage of the various crotch formations of at least 20 predominating species. A well known computer aphorism is: garbage in, garbage out.

If staff or volunteer help will do data gathering, careful supervision and thorough training are essential. The public safety and prudent use of tax revenues depends upon accurate information.

Once data and data parameters for the inventory are agreed upon, data gathering forms should be designed for speed of use in the field. These forms will differ city by city. Forms should be designed also to minimize the cost of data entry into permanant storage. If computerization is to be used, data will be stored on magnetic tape or discs.

Our firm is working toward development of equipment allowing inventory takers to enter data directly onto ordinary cassette tape, which can be entered into computers in a matter of minutes. Data entry from field forms onto magnetic tape or discs represents 10 to 20 percent of the cost of an inventory. We have found the use of punch cards or "optical mark sense cards" in the field not to be efficient.

Through the use of simple programming computerized data on tapes or discs can then be printed out in any tabular layout desired or displayed on CRT screens at modest cost.

By interpreting various computer sortings of inventory data the urban forest manager or consultant can reach conclusions as to condition and needs of the urban forest. Data sorts may disclosé unbalanced species distribution and the need to change planting plans accordingly. Or there may be too few maintenance needs of a certain type to justify purchase of specialized equipment or to initiate appropriate contracted maintenance programs. Or planting sites may be concentrated in neighborhoods more interested in better sidewalks than trees. Interpretation of sorted data often discloses the need for policy and management changes.

Tree and planting site inventories must lastly be kept up to date. Each time a maintenance operation is completed or a tree planted, old data should be revised. Inventories should be completely retaken each three to seven years as trees are living and thus changing.

Inventory costs including computerization range from about 15 to 60 cents per tree per year. These costs can be more than offset by efficiencies resulting from better scheduling and clustering of needed work items. But the most substantial payoff from an inventory will be the improved health and beauty of the urban forest. Provision of adequate care for thousands or tens of thousands of individual trees simply cannot be accomplished without an inventory.

For furthur information on street tree inventories or inventory computerization contact Jim Rubens, Rubens Tree Service, 147 South Main Street, White River Junction, Vermont 05001.
Phone 802-295-9186.

Rubens Tree Service

university of wisconsin / stevens point • stevens point, wisconsin 54481

UNIVERSITY OF WISCONSIN-STEVENS POINT URBAN FOREST

A Computerized Urban Forest Inventory Model Based on Tree Value

by: Robert W. Miller, William A. Sylvester and Michael S. Marano*

*The authors are Associate Professor of Urban Forestry, Associate Professor of Forestry, and Data Processing Specialist, College of Natural Resources, University of Wisconsin-Stevens Point.

Effective management of urban trees requires an inventory system sophisticated enough to provide information essential to the development of management plans, yet simple enough to be cost effective. This program meets these two objectives by providing a large data base with numerous output options at a relatively low cost.

The system is now operational in the City of Stevens Point, Wisconsin (pop. 30,000) and is being tested for adoption by the City of Milwaukee. Experience has shown that data collection takes less than 60 seconds per tree, and keypunching and data processing costs average $.11 per tree.

The program allows for an inventory of trees with tree and site characteristics noted as described in Tables 1 and 2. The tree species list is easily altered to meet the needs of specific communities. Available planting sites are inventoried with species and planting stock sizes noted. The basic unit of measurement, Basal Area, is converted to value utilizing the tree valuation system developed by the International Society of Arboriculture. Use of growth data will project tree size and value in ten years.

Program output is presented by work (management) unit (locally determined) and by city summary. Output includes: (a) Tree projection table, (b) Basic work unit comparative summary table, (c) Stand and value tables, (d) Species and value tables, (e) Stand and value table by species, (f) Site description summary tables, (g) Tree description summary tables, and (h) Planting recommendation table. A field work sheet is printed by work unit listing location, species, tree description information, cultural needs, and planting recommendations. See Appendix Table A for examples of output. All output is optional, depending on the needs of the city forester.

Output may be used to develop management plans for activities such as tree removal, tree planting and pruning. Budget and work schedules for these activities may be anticipated for up to five years. Species and cultivars

are compared to determine those most in need of cultural work, thus providing a basis for future selection of low maintenance species and cultivars. Planting recommendations are prioritized based on those sites most critical in terms of shade tree establishment.

Computation of tree value has the distinct advantage of allowing the city forester to assess the tree value for any street, work unit, ward, or the entire city. An assessment of tree value may also aid the city forester in developing budget requests commensurate with the value of the resource.

Data are easily updated by field crews performing regular maintenance work or by periodic re-inventories.

The inventory program was developed to serve as the data base for a management simulation model currently under development.

SIT 1. Input Data Per Tree

Column No.

1 - 3 Work Unit number

4 - 8 Street Code Number

9 - 13 Block Number

14 Coordinate

N = 1
E = 2
S = 3
W = 4

15 Side of Street

N = 1
E = 2
S = 3
W = 4

16 Tree Present

0 = present
1 = Space to plant

17 - 18 Tree Number

Start with 1 on each block, increasing away from coordinate intersection.

19 - 21 Species code. If space to plant, recommend a species.

22 23.24 DBH to nearest inch. Growth data trees to nearest tenth. If space to plant recommend size.

25 Condition class

All specimens start with a condition class of 100%. Deduct for defect in form, uncorrectible branching habit, damage, disease, etc.

100 = 0
80 = 1
60 = 2
40 = 3
20 = 4
0 = 5

26.27 28 Radial growth to nearest 1/100 inch (Based on a sample)

29 Pruning recommendations

No = 0
Yes, 1 year = 1
Yes, 2-3 years = 2
Yes, 3-5 years = 3

30 Remove tree?

no = 0
Yes, immediately = 1
yes, 1 year = 2
Yes, 2-3 years = 3
Yes, 3-5 years = 4

31 Will tree survive 10 years?

yes = 0
no = 1

32 Overhead wires present

no = 0

13 to 17 feet = 1
18 to 22 feet = 2
23 to 27 feet = 3
28 to 32 feet = 4
33 feet = 5

33 Land use

Unknown = 0
Commercial = 1
Industrial = 2
Residential = 3
Institutional = 4
Undeveloped = 5
Other = 6

Column No.

35 Tree vigor

Good = 0
Fair = 1
Poor = 2
Dead = 3

36 Percent deadwood in crown

none = 0
1 - 10% = 1
11 - 25% = 2
26 - 50% = 3
51 - 75% = 4
76 -100% = 5

37 Tree damaged?

No = 0
Vandalism = 1
Auto Impact = 2
Disease = 3
Insect = 4
Storm = 5
Other = 6

38 Planting priority

Tree present = 0
New residential street = 1
Replacement residential = 2
Business = 3
School/Church = 4
Vacant lot = 5
Park or dense private trees = 6
Home owner refusal = 7
Not plantable at present = 8

39 Split crotch

no = 0
yes = 1

40 Replant

no = 0
yes = 1

42 Width of tree lawn

N.A. = 0
less than 4' = 1
4-8' = 2
8-10' = 3
greater than 10' = 4

75 - 80 Card number

NAME ________ DATE ________ SEGMENT NO. ________

ESS RANGE ________ TO ________ CITY ________ PAGE ________

QUARTER SECTION NUMBER	STREET CODE	BLOCK	COORD.	SIDE OF ST.	TREE PRES.	TREE NUMBER	SPECIES	D.B.H.	CONDITION	10 YEAR RADIAL GROWTH	PRUNE	REMOVE	SURVIVE	WIRE	LAND USE	TREE VIGOR	% DEADWOOD	TREE DAMAGE	PLANTING	SPLIT	REPLANT	LAWN	CARD NUMBER
1 2 3	4 5 6 7 8	9 10 11 12 13	14	15	16	17 18	19 20 21	22 23 24	25	26 27 28	29	30	31	32	33	35	36	37	38	39	40	12	75 76 77 78 79 80
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Table 2. Field Data Sheet.

Appendix

Table A. Selected output tables for the City of Stevens Point, Wisconsin. Includes city summary tables and tables from one work unit.

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                         BASIC COMPARATIVE SUMMARY TABLE

 ====================================================================================
 UNIT NO.OF % OF BASAL AREA % OF VALUE OF % OF NO.OF AVER AVER      PROJECTED
      TREES CITY  SQ. FEET  CITY TREES $  CITY  SP   COND DBH.       VALUE $
 ====================================================================================
  42    28  1.0       0.55  0.0      942.  0.0   3   98.6  1.6          9969.
 283   304 10.7     211.64  9.0   251768. 10.8  15   84.1  9.9        429121.
 284   465 16.4     187.29  8.0   237700. 10.2  18   86.6  7.3        464924.
 292     4  0.1       0.18  0.0      214.  0.0   2   99.9  2.8          1033.
 293    66  2.3      36.27  1.5    41086.  1.8  11   88.8  7.6         70366.
 294    64  2.3      19.46  0.8    23179.  1.0  10   93.8  4.9         46531.
 301     1  0.0       0.02  0.0       47.  0.0   1   99.9  2.0           382.
 304    50  1.8      25.37  1.1    22903.  1.0   9   92.4  6.7         42415.
 311    20  0.7       2.24  0.1     2130.  0.1   3   98.0  3.1          8912.
 321   426 15.0     589.14 25.1   542132. 23.3  14   81.4 13.9        788000.
 322    55  1.9     110.19  4.7    80977.  3.5   8   77.1 16.6        111265.
 324   308 10.8     345.10 14.7   297147. 12.8  14   81.0 12.0        453172.
 331   340 12.0     238.51 10.2   313272. 13.4  12   84.8  9.8        520039.
 332   335 11.8     358.94 15.3   309773. 13.3  15   83.2 11.7        475924.

CITY    2843       2125.          2123270.      26   84.7  9.0       3421052.
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                                       TREE PROJECTION TABLE

=============================================================================================
                                       PRESENT               10 YEAR FUTURE         RECOMMENDATIONS
UNIT  ST  BLOCK   SP      C    DBH  BASAL    VALUE    DBH  BASAL    VALUE   PRUNE  REMOVE  REPLANT
                                     AREA                   AREA
=============================================================================================
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  2900 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-SU 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   008  3000 MAP-NO 100   2.0       3.      47.   5.7     26.     382.  2-3 YR  NO       NO
42   026  2900 MAP-NO 100   1.0       1.      12.   4.7     18.     263.  NO      NO       NO
42   026  2900 MAP-NO 100   1.0       1.      12.   4.7     18.     263.  NO      IMMED.   YES
42   026  2900 MAP-NO 100   1.0       1.      12.   4.7     18.     263.  NO      NO       NO
|    |    |    |      |     |         |       |     |       |       |       |       |        |
V    V    V    V      V     V         V       V     V       V       V       V       V        V
334  177  3000 ELM-AM  80  14.0     154.     739.  17.4    237.    1138.  2-3 YR  NO       NO
334  177  3100 ELM-AM  80  15.0     177.     848.  18.3    264.    1269.  2-3 YR  NO       NO
334  177  3100 ELM-AM  80  12.0     113.     543.  15.4    187.     897.  2-3 YR  NO       NO
334  177  3100 ELM-AM  80  20.0     314.    1508.  23.2    423.    2032.  2-3 YR  NO       NO
334  177  3100 ELM-AM 100  12.0     113.     679.  15.4    187.    1122.  2-3 YR  NO       NO
334  177  3100 ELM-AM  80  14.0     154.     739.  17.4    237.    1138.  2-3 YR  NO       NO
       NUMBER OF UNITS =  14                 NUMBER OF TREES =     2843
       AVERAGE DIAMETER = 10.1              AVERAGE VALUE = $      819.
       AVERAGE BASAL AREA =       0.8       TOTAL VALUE = $    2329309.
       TOTAL BASAL AREA  (SQ. FT.) =         2344.

       **** 10 YEAR PROJECTIONS ****
       AVERAGE DIAMETER = 13.6              AVERAGE VALUE = $     1332.
       AVERAGE BASAL AREA =       1.3       TOTAL VALUE = $    3787284.
       TOTAL BASAL AREA  (SQ. FT.) =         3579.
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COMBINED SPECIES -STAND AND VALUE TABLE FOR THE CITY

DBH CLASS	NUMBER OF TREES	% OF CITY	AVER. COND.	BASAL AREA SQUARE FEET	VALUE OF TREES $
0+	157	5.5	88.8	0.9	1090.
2	570	20.0	93.7	16.0	25400.
4	143	5.0	87.8	15.3	23718.
6	236	8.3	85.1	53.2	82841.
8	242	8.5	85.1	92.0	138364.
10	294	10.3	85.0	169.2	258244.
12	319	11.2	83.1	259.3	336822.
14	312	11.0	80.4	341.2	381500.
16	181	6.4	77.7	259.5	230698.
18	111	3.9	78.4	198.4	166886.
20	90	3.2	75.3	200.1	171412.
22	50	1.8	80.0	134.6	109009.
24	40	1.4	77.5	128.6	98356.
26	33	1.2	76.4	123.3	82455.
28	20	0.7	76.0	87.3	57392.
30+	45	1.6	68.4	205.2	165113.
TOTAL	2843	100.0	84.7	2344.2	2329301.

COMBINED SPECIES -STAND AND VALUE TABLE FOR UNIT 284

DBH CLASS	NO. OF TREES	% OF UNIT	AVER. COND.	BASAL AREA SQ. FEET	VALUE OF TREES $
0+	30	6.5	84.7	0.2	157.
2	91	19.6	89.7	2.3	3733.
4	57	12.3	88.8	6.2	10506.
6	67	14.4	83.3	15.4	26573.
8	67	14.4	88.4	26.0	42480.
10	64	13.8	87.8	37.0	58154.
12	40	8.6	86.5	32.5	41663.
14	24	5.2	85.0	26.1	25156.
16	13	2.8	73.8	18.3	12822.
18	10	2.2	76.0	18.3	13043.
20	1	0.2	60.0	2.2	1131.
22	1	0.2	100.0	2.6	2281.
24	0	0.0	0.0	0.0	0.
26	0	0.0	0.0	0.0	0.
28	0	0.0	0.0	0.0	0.
30+	0	0.0	0.0	0.0	0.
TOTAL	465	100.0	86.6	187.3	237700.

IES MARY SITE DESCRIPTION TABLE FOR THE CITY
(PERCENT OF TOTAL NUMBER OF TREES .

SPECIES	NO. OF TREES	OVERHEAD WIRES (FEET) 0+	13+	18+	23+	28+	33+	UNK	LAND USE CATAGORY COM	IND	RES	INS	UND	OTH	NAV	TREE LAWN WIDTH 1+	5+	8+	10+
ASH-GR	82	72.	1.	10.	0.	17.	0.	0.	0.	0.	71.	29.	0.	0.	0.	0.	83.	15.	2.
ASH-WH	136	76.	1.	15.	5.	4.	0.	0.	0.	0.	88.	12.	0.	0.	0.	4.	50.	35.	12.
BASSW	89	83.	0.	8.	7.	0.	2.	0.	13.	0.	84.	2.	0.	0.	0.	0.	61.	27.	12.
BOXEL	28	71.	0.	11.	14.	0.	4.	0.	4.	0.	96.	0.	0.	0.	0.	4.	86.	0.	11.
CRAB-F	5	40.	0.	40.	20.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	40.	60.	0.
ELM-AM	442	74.	0.	17.	4.	3.	1.	0.	10.	0.	81.	8.	0.	0.	0.	2.	57.	23.	18.
ELM-SI	76	68.	0.	11.	14.	5.	1.	0.	1.	0.	97.	1.	0.	0.	0.	0.	75.	22.	3.
ELM-SP	5	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	80.	0.	20.
GINKGO	2	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
HAWT-W	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
HONEY	32	59.	0.	13.	28.	0.	0.	0.	6.	0.	75.	19.	0.	0.	0.	0.	78.	13.	9.
HORSE	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	0.	0.	99.
LIND-L	27	67.	0.	4.	30.	0.	0.	0.	0.	0.	99.	0.	0.	0.	4.	0.	93.	0.	4.
LIND-S	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
MAP-NC	310	66.	0.	12.	10.	5.	7.	0.	7.	0.	84.	9.	0.	0.	1.	0.	76.	20.	3.
MAP-RE	844	81.	1.	11.	3.	2.	1.	1.	1.	0.	95.	2.	0.	0.	1.	2.	80.	13.	4.
MAP-SI	375	75.	0.	14.	9.	2.	0.	0.	2.	1.	96.	1.	0.	0.	1.	1.	77.	16.	6.
MAP-SU	200	83.	1.	11.	4.	2.	1.	1.	1.	0.	90.	6.	0.	3.	3.	1.	89.	3.	5.
MAP-SP	5	99.	0.	0.	0.	0.	0.	0.	40.	0.	60.	0.	0.	0.	0.	40.	60.	0.	0.
OAK-EN	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
OAK-RE	4	50.	0.	25.	0.	0.	25.	0.	0.	0.	99.	0.	0.	0.	0.	0.	75.	25.	0.
OAK-WH	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.
OAK-SP	1	0.	0.	99.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
SYCAM	2	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
H-MISC	151	75.	0.	12.	10.	2.	1.	1.	1.	0.	93.	0.	5.	0.	1.	0.	81.	14.	5.
S-MISC	22	36.	0.	41.	5.	18.	0.	0.	0.	0.	95.	0.	0.	5.	9.	0.	68.	14.	9.
TOTAL	2843	76.	1.	13.	6.	3.	1.	1.	4.	0.	90.	5.	0.	0.	1.	1.	74.	17.	7.

SPECIES SUMMARY AND SITE DESCRIPTION TABLE FOR UNIT 284
(PERCENT OF TOTAL NUMBER OF TREES)

SPECIES	NO. OF TREES	OVERHEAD WIRES (FEET) 0+	13+	18+	23+	28+	33+	UNK	LAND USE CATAGORY COM	IND	RES	INS	UND	OTH	NAV	TREE LAWN WIDTH 1+	5+	8+	10+
ASH-GR	23	96.	0.	4.	0.	0.	0.	0.	0.	0.	26.	74.	0.	0.	0.	0.	99.	0.	0.
ASH-WH	12	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	92.	8.	0.
BASSW	5	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
CRAB-F	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
ELM-AM	1	0.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
ELM-SP	2	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
HONEY	8	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	75.	25.	0.
LIND-L	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.
LIND-S	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
MAP-NC	37	86.	0.	14.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	11.	0.	54.	35.	0.
MAP-RE	181	90.	0.	3.	2.	5.	1.	1.	0.	1.	99.	0.	0.	0.	1.	0.	85.	14.	0.
MAP-SI	102	92.	1.	0.	6.	0.	1.	1.	0.	1.	98.	0.	0.	0.	1.	0.	91.	8.	0.
MAP-SU	57	99.	0.	0.	0.	0.	0.	0.	0.	0.	91.	0.	0.	9.	0.	0.	96.	4.	0.
MAP-SP	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
OAK-RE	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
OAK-WH	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.
H-MISC	29	97.	0.	3.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	3.	0.	97.	0.	0.
S-MISC	2	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.
TOTAL	465	92.	0.	3.	2.	2.	0.	0.	0.	0.	94.	4.	0.	1.	3.	0.	86.	11.	0.

COMBINED DBH-SPECIES AND VALUE TABLE FOR THE CITY

SPECIES	NO. OF TREES	% OF CITY	AVER. COND.	AVER. DBH	BASAL AREA SQ. FEET	VALUE OF TREES $
ASH-GR	82	2.9	93.7	4.0	13.4	14229.
ASH-WH	136	4.8	91.0	5.1	39.0	41838.
BASSW	89	3.1	81.6	12.6	97.6	101233.
BOXEL	28	1.0	56.4	13.8	40.3	11481.
CRAB-F	5	0.2	88.0	1.6	0.1	121.
ELM-AM	442	15.6	79.4	17.8	870.0	584418.
ELM-SI	76	2.7	82.4	12.8	78.4	27246.
ELM-SP	5	0.2	80.0	17.4	9.0	9439.
GINKGO	2	0.1	90.0	14.0	2.5	4524.
HAWT-W	1	0.0	100.0	1.0	0.0	9.
HONEY	32	1.1	91.9	3.7	3.9	4597.
HORSE	1	0.0	100.0	6.0	0.2	254.
LIND-L	27	0.9	97.0	2.3	0.8	1355.
LIND-S	1	0.0	60.0	1.0	0.0	6.
MAP-NO	310	10.9	93.6	4.1	48.7	89801.
MAP-RE	844	29.7	84.1	9.6	519.6	907967.
MAP-SI	375	13.2	80.7	13.0	455.1	391004.
MAP-SU	200	7.0	83.9	8.2	96.8	172620.
MAP-SP	5	0.2	100.0	2.6	0.2	174.
OAK-EN	1	0.0	100.0	2.0	0.0	47.
OAK-RE	4	0.1	75.0	15.9	7.3	10162.
OAK-WH	1	0.0	60.0	2.0	0.0	28.
OAK-SP	1	0.0	60.0	30.0	4.9	6362.
SYCAM	2	0.1	100.0	7.0	0.5	942.
H-MISC	151	5.3	88.7	5.5	50.3	35734.
S-MISC	22	0.8	88.2	5.6	5.3	3708.
****** TOTALS ******						
26	2843	100.0	84.7	10.1	2344.	2329301.

COMBINED DBH-SPECIES AND VALUE TABLE FOR UNIT 42

STAND AND VALUE TABLE FOR UNIT 284
TREE SPECIES = MAPLE,RED

DIAMETER CLASS	NO. OF TREES	AVERAGE CONDITION	BASAL AREA SQ. FEET	PRESENT VALUE
0*	5	84.0	0.03	50.
2	14	90.0	0.47	935.
4	25	85.6	2.72	5030.
6	34	81.2	7.82	13789.
8	40	86.0	15.45	29022.
10	40	88.5	22.72	43635.
12	18	83.3	14.68	26508.
14	4	95.0	4.43	9116.
18	1	40.0	1.97	1701.
TOTALS	181	85.5	70.29	129786.00

COMBINED DBH-SPECIES AND VALUE TABLE FOR UNIT 284

SPECIES	NO. OF TREES	% OF UNIT	AVER. COND.	AVER. DBH	BASAL AREA SQ. FEET	VALUE OF TREES $
ASH-GR	23	4.9	98.3	2.4	1.	1431.
ASH-WH	12	2.6	90.0	4.5	2.	1916.
BASSW	5	1.1	96.0	8.2	2.	2847.
CRAB-F	1	0.2	80.0	2.0	0.	30.
ELM-AM	1	0.2	100.0	11.0	1.	570.
ELM-SP	2	0.4	90.0	12.0	2.	1951.
HONEY	8	1.7	97.5	5.0	2.	1824.
LIND-L	1	0.2	100.0	2.0	0.	38.
LIND-S	1	0.2	60.0	1.0	0.	6.
MAP-NO	37	8.0	91.4	4.2	5.	8996.
MAP-RE	181	38.9	85.5	7.8	70.	129786.
MAP-SI	102	21.9	83.5	11.7	89.	63010.
MAP-SU	57	12.3	86.3	5.3	11.	21628.
MAP-SP	1	0.2	100.0	4.0	0.	75.
OAK-RE	1	0.2	60.0	16.0	1.	1810.
OAK-WH	1	0.2	60.0	2.0	0.	28.
H-MISC	29	6.2	83.4	2.7	2.	1637.
S-MISC	2	0.4	100.0	3.5	0.	118.
****** TOTALS ******						
18	465	100.0	86.6	7.3	187.	237700.

STAND AND VALUE TABLE FOR UNIT 284
TREE SPECIES = MAPLE,SILVER

DIAMETER CLASS	NO. OF TREES	AVERAGE CONDITION	BASAL AREA SQ. FEET	PRESENT VALUE
0*	4	80.0	0.02	15.
2	3	86.7	0.09	73.
4	7	80.0	0.71	498.
6	3	93.3	0.66	536.
8	9	91.1	3.51	2762.
10	14	82.9	8.43	6060.
12	20	89.0	16.39	12645.
14	19	82.1	20.62	14654.
16	12	75.0	16.94	11013.
18	9	80.0	16.31	11342.
20	1	60.0	2.18	1131.
22	1	100.0	2.64	2281.
TOTALS	102	83.5	88.51	

DIAMETER SUMMARY AND SITE DESCRIPTION TABLE FOR THE CITY
(PERCENT OF TOTAL NUMBER OF TREES)

DBH CLASS	NO. OF TREES	OVERHEAD WIRES (FEET) 0+	13+	18+	23+	28+	33+	UNK	LAND USE CATAGORY COM	IND	RES	INS	UND	OTH	NAV	TREE LAWN WIDTH 1+	5+	8+	10+
0+	157	71.	1.	10.	9.	2.	8.	1.	1.	1.	88.	6.	4.	0.	1.	1.	80.	14.	4.
2	570	72.	0.	13.	8.	6.	2.	1.	7.	0.	78.	14.	0.	1.	3.	0.	70.	21.	6.
4	143	81.	0.	10.	6.	1.	1.	1.	1.	0.	96.	1.	0.	1.	3.	1.	76.	13.	5.
6	236	83.	2.	7.	5.	3.	0.	0.	2.	0.	97.	0.	0.	0.	0.	1.	76.	17.	6.
8	242	79.	0.	10.	5.	5.	0.	1.	2.	1.	96.	0.	0.	0.	0.	1.	82.	10.	7.
10	294	80.	0.	9.	7.	2.	1.	0.	1.	0.	97.	1.	0.	1.	0.	1.	84.	12.	3.
12	319	78.	0.	13.	6.	1.	1.	1.	1.	0.	93.	4.	0.	0.	0.	1.	79.	14.	5.
14	313	74.	0.	17.	5.	3.	1.	1.	5.	0.	89.	5.	0.	0.	0.	2.	70.	18.	10.
16	181	69.	1.	17.	9.	4.	1.	0.	6.	0.	91.	3.	0.	0.	0.	3.	69.	17.	11.
18	112	74.	0.	17.	6.	2.	1.	0.	4.	0.	95.	1.	0.	0.	0.	1.	73.	16.	10.
20	91	79.	1.	14.	5.	0.	0.	0.	7.	0.	88.	5.	0.	0.	0.	2.	68.	19.	11.
22	50	74.	0.	16.	4.	4.	2.	0.	2.	0.	90.	8.	0.	0.	0.	0.	60.	22.	18.
24	40	73.	3.	15.	8.	3.	0.	0.	0.	0.	93.	8.	0.	0.	0.	8.	60.	20.	13.
26	35	63.	0.	29.	3.	6.	0.	0.	3.	0.	89.	9.	0.	0.	0.	3.	40.	43.	14.
28	21	81.	0.	14.	0.	0.	5.	0.	5.	0.	95.	0.	0.	0.	5.	0.	57.	33.	5.
30+	39	74.	0.	26.	0.	0.	0.	0.	15.	0.	79.	5.	0.	0.	0.	0.	69.	23.	8.
TOTAL	2843	76.	1.	13.	6.	3.	1.	1.	4.	0.	90.	5.	0.	0.	1.	1.	74.	17.	7.

DIAMETER SUMMARY AND SITE DESCRIPTION TABLE FOR UNIT 284
(PERCENT OF TOTAL NUMBER OF TREES)

DBH CLASS	NO. OF TREES	OVERHEAD WIRES (FEET) 0+	13+	18+	23+	28+	33+	UNK	LAND USE CATAGORY COM	IND	RES	INS	UND	OTH	NAV	TREE LAWN WIDTH 1+	5+	8+	10+
0+	30	99.	0.	0.	0.	0.	0.	3.	0.	3.	93.	0.	0.	0.	3.	0.	97.	0.	0.
2	91	92.	0.	8.	0.	0.	0.	0.	0.	0.	76.	19.	0.	5.	9.	0.	82.	9.	0.
4	57	91.	0.	7.	2.	0.	0.	0.	0.	0.	99.	0.	0.	0.	5.	0.	75.	19.	0.
6	67	97.	1.	0.	0.	0.	1.	0.	0.	0.	99.	0.	0.	0.	0.	0.	79.	21.	0.
8	67	82.	0.	1.	7.	9.	0.	0.	0.	1.	99.	0.	0.	0.	0.	0.	87.	13.	0.
10	64	89.	0.	0.	5.	6.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	91.	9.	0.
12	40	98.	0.	0.	3.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	95.	5.	0.
14	24	99.	0.	0.	0.	0.	0.	4.	0.	0.	96.	0.	0.	0.	0.	0.	92.	8.	0.
16	13	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
18	10	90.	0.	0.	0.	0.	10.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
20	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
22	1	99.	0.	0.	0.	0.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	0.
24	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
26	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
28	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
30+	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	465	92.	0.	3.	2.	2.	0.	0.	0.	0.	94.	4.	0.	1.	3.	0.	86.	11.	0.

SPECIES SUMMARY AND TREE DESCRIPTION TABLE FOR UNIT 284
(PERCENT OF TOTAL NUMBER OF TREES)

SPECIES	NO. OF TREES	CONDITION CLASS 0	20	40	60	80	100	VIGOR CLASS GO.	FR.	PR.	DO.	REMOVAL CLASS NO	IMM	1YR	2YR	3YR	SURVIVE YES	NO	PRUNING CLASS NO	1YR	2YR	3YR	CROWN DEADWOOD CLASS 0	1+	11+	26+	51+	76+	SPLIT NO	YES
ASH-GR	82	1.	1.	0.	2.	16.	79.	98.	0.	2.	0.	98.	1.	1.	0.	0.	99.	0.	51.	18.	27.	4.	62.	32.	2.	1.	1.	1.	99.	0.
ASH-WH	136	0.	0.	1.	4.	32.	63.	97.	2.	1.	0.	99.	0.	0.	0.	0.	99.	1.	36.	9.	51.	4.	88.	10.	3.	0.	0.	0.	99.	0.
BASSW	99	1.	0.	2.	17.	46.	34.	98.	1.	0.	1.	99.	1.	0.	0.	0.	99.	1.	57.	21.	20.	1.	79.	19.	0.	1.	0.	1.	99.	0.
BOXEL	28	4.	0.	7.	46.	36.	7.	89.	7.	0.	4.	86.	4.	0.	0.	11.	93.	7.	43.	29.	21.	7.	32.	43.	21.	0.	0.	4.	99.	0.
CRAB-F	5	0.	0.	0.	20.	20.	60.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	80.	20.	0.	0.	0.	0.	99.	0.
ELM-AM	442	0.	0.	2.	27.	41.	29.	95.	4.	1.	0.	97.	1.	1.	1.	0.	97.	3.	36.	12.	50.	2.	40.	53.	6.	1.	0.	0.	99.	0.
ELM-SI	76	0.	0.	0.	14.	59.	26.	93.	7.	0.	0.	99.	0.	0.	1.	0.	99.	1.	42.	16.	30.	12.	43.	46.	11.	0.	0.	0.	99.	0.
ELM-SP	5	0.	0.	0.	40.	20.	40.	80.	20.	0.	0.	99.	0.	0.	0.	0.	99.	0.	40.	20.	0.	40.	40.	60.	0.	0.	0.	0.	99.	0.
GINKGO	2	0.	0.	0.	0.	50.	50.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	0.	50.	50.	99.	0.	0.	0.	0.	0.	99.	0.
HAWT-W	1	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
HONEY	32	0.	0.	0.	6.	28.	66.	97.	3.	0.	0.	99.	0.	0.	0.	0.	99.	0.	44.	9.	47.	0.	89.	9.	3.	0.	0.	0.	99.	0.
HORSE	1	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
LIND-L	27	0.	0.	0.	0.	15.	85.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	7.	0.	93.	0.	99.	0.	0.	0.	0.	0.	99.	0.
LIND-S	1	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.
MAP-NO	310	1.	0.	1.	3.	19.	76.	97.	2.	1.	1.	98.	1.	0.	0.	0.	98.	2.	44.	11.	42.	3.	83.	15.	1.	0.	0.	1.	99.	0.
MAP-RE	844	0.	0.	2.	12.	45.	40.	95.	4.	1.	0.	99.	0.	0.	0.	0.	98.	2.	64.	12.	12.	13.	66.	30.	2.	0.	0.	1.	99.	1.
MAP-SI	375	0.	0.	3.	20.	47.	30.	97.	3.	0.	0.	98.	0.	1.	1.	0.	98.	2.	53.	12.	19.	16.	62.	36.	2.	0.	0.	0.	99.	0.
MAP-SU	200	1.	2.	5.	11.	41.	44.	89.	6.	4.	2.	95.	3.	2.	0.	0.	94.	6.	56.	25.	14.	6.	57.	32.	9.	1.	2.	1.	99.	0.
MAP-SP	5	0.	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	80.	20.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
OAK-EN	1	0.	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
OAK-RE	4	0.	0.	25.	25.	0.	50.	75.	25.	0.	0.	99.	0.	0.	0.	0.	99.	0.	75.	25.	0.	0.	50.	25.	25.	0.	0.	0.	99.	0.
OAK-WH	1	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.
OAK-SP	1	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
SYCAM	2	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	0.	99.	0.
H-MISC	151	1.	1.	1.	9.	26.	62.	95.	3.	1.	1.	99.	1.	0.	0.	0.	99.	1.	50.	12.	31.	7.	72.	23.	3.	1.	1.	0.	99.	1.
S-MISC	22	0.	0.	5.	9.	27.	59.	91.	5.	5.	0.	99.	0.	0.	0.	0.	95.	5.	99.	0.	0.	0.	86.	9.	0.	5.	0.	0.	99.	0.
TOTAL	2843	0.	0.	2.	14.	38.	45.	95.	3.	1.	0.	98.	1.	0.	0.	0.	98.	2.	51.	13.	27.	8.	64.	31.	4.	1.	0.	0.	99.	0.

SPECIES SUMMARY AND TREE DESCRIPTION TABLE FOR UNIT 284
(PERCENT OF TOTAL NUMBER OF TREES)

SPECIES	NO. OF TREES	CONDITION CLASS 0	20	40	60	80	100	VIGOR CLASS GO.	FR.	PR.	DO.	REMOVAL CLASS NO	IMM	1YR	2YR	3YR	SURVIVE YES	NO	PRUNING CLASS NO	1YR	2YR	3YR	CROWN DEADWOOD CLASS 0	1+	11+	26+	51+	76+	SPLIT NO	YES
ASH-GR	23	0.	0.	0.	0.	9.	91.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	52.	35.	9.	4.	22.	78.	0.	0.	0.	0.	99.	0.
ASH-WH	12	0.	0.	0.	17.	17.	67.	92.	8.	0.	0.	99.	0.	0.	0.	0.	99.	0.	58.	17.	8.	17.	58.	42.	0.	0.	0.	0.	99.	0.
BASSW	5	0.	0.	0.	0.	20.	80.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	80.	20.	0.	0.	80.	20.	0.	0.	0.	0.	99.	0.
CRAB-F	1	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
ELM-AM	1	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
ELM-SP	2	0.	0.	0.	0.	50.	50.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	0.	99.	0.
HONEY	8	0.	0.	0.	0.	13.	88.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	75.	13.	13.	0.	75.	13.	13.	0.	0.	0.	99.	0.
LIND-L	1	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
LIND-S	1	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.
MAP-NO	37	3.	0.	0.	3.	24.	70.	97.	0.	0.	3.	97.	3.	0.	0.	0.	97.	3.	38.	14.	32.	16.	68.	30.	0.	0.	0.	3.	99.	0.
MAP-RE	181	0.	0.	1.	14.	42.	43.	96.	4.	1.	0.	99.	0.	0.	0.	0.	99.	1.	34.	18.	11.	37.	48.	50.	3.	0.	0.	0.	98.	2.
MAP-SI	102	0.	0.	3.	18.	38.	41.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	36.	8.	18.	38.	50.	50.	0.	0.	0.	0.	99.	1.
MAP-SU	57	0.	2.	2.	11.	35.	51.	91.	5.	2.	2.	98.	0.	2.	0.	0.	98.	2.	33.	44.	9.	14.	40.	51.	5.	0.	2.	2.	99.	0.
MAP-SP	1	0.	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	99.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
OAK-RE	1	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	0.	99.	0.
OAK-WH	1	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
H-MISC	29	0.	7.	3.	3.	38.	48.	93.	0.	7.	0.	99.	0.	0.	0.	0.	93.	7.	28.	17.	52.	3.	45.	48.	0.	3.	3.	0.	99.	0.	0.
S-MISC	2	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	0.	99.	0.
TOTAL	465	0.	1.	1.	12.	35.	51.	96.	3.	1.	0.	99.	0.	0.	0.	0.	98.	2.	38.	19.	16.	27.	48.	49.	4.	1.	1.	0.	99.	0.

DIAMETER SUMMARY AND TREE DESCRIPTION TABLE FOR THE CITY
(PERCENT OF TOTAL NUMBER OF TREES)

DBH CLASS	NO. OF TREES	CONDITION CLASS 0	20	40	60	80	100	VIGOR CLASS GD.	FR.	PR.	DD.	REMOVAL CLASS NO	IMM	1YR	2YR	3YR	SURVIVE YES	PRUNING CLASS NO	NO	1YR	2YR	3YR	CROWN 0	DEADWOOD CLASS 1+	11+	26+	51+	76++	SPLIT NO	YES
0+	157	1.	1.	2.	8.	26.	62.	90.	4.	4.	2.	97.	3.	0.	0.	0.	95.	5.	54.	10.	32.	4.	78.	18.	2.	0.	1.	1.	99.	0.
2	570	1.	0.	1.	3.	20.	76.	94.	4.	1.	1.	99.	1.	0.	0.	0.	99.	1.	32.	14.	52.	2.	83.	15.	1.	0.	0.	1.	99.	0.
4	143	1.	0.	0.	10.	38.	52.	94.	6.	1.	0.	99.	1.	0.	0.	0.	99.	0.	55.	17.	12.	15.	59.	38.	2.	0.	0.	1.	99.	0.
6	236	0.	2.	1.	10.	43.	44.	95.	3.	2.	0.	98.	1.	1.	0.	0.	97.	3.	64.	10.	12.	14.	68.	28.	2.	1.	1.	0.	99.	0.
8	242	0.	0.	2.	11.	44.	43.	97.	2.	0.	1.	98.	0.	1.	0.	0.	98.	2.	57.	15.	15.	13.	63.	32.	4.	0.	0.	0.	99.	0.
10	294	0.	0.	3.	11.	44.	42.	97.	2.	1.	0.	99.	0.	0.	0.	0.	99.	1.	63.	12.	13.	12.	65.	32.	2.	1.	0.	0.	99.	1.
12	319	0.	0.	2.	15.	48.	35.	97.	2.	2.	0.	98.	0.	0.	1.	0.	98.	2.	63.	12.	18.	8.	62.	31.	6.	1.	0.	0.	99.	1.
14	313	0.	1.	3.	18.	51.	29.	97.	2.	0.	0.	97.	1.	1.	1.	1.	98.	2.	59.	12.	22.	6.	58.	35.	6.	0.	0.	0.	99.	1.
16	181	0.	0.	4.	30.	39.	27.	93.	7.	1.	0.	97.	1.	1.	1.	1.	97.	3.	48.	19.	25.	8.	45.	45.	7.	2.	0.	0.	99.	1.
18	112	0.	0.	4.	21.	56.	20.	96.	4.	3.	0.	97.	0.	1.	2.	0.	96.	4.	53.	13.	27.	7.	48.	42.	7.	1.	2.	0.	99.	0.
20	91	0.	0.	4.	35.	40.	21.	96.	4.	0.	0.	99.	0.	1.	0.	0.	98.	2.	45.	10.	37.	8.	48.	48.	3.	0.	0.	0.	99.	1.
22	50	0.	0.	4.	24.	40.	32.	98.	2.	0.	0.	96.	2.	0.	0.	2.	98.	2.	48.	14.	30.	8.	48.	46.	6.	0.	0.	0.	99.	0.
24	40	0.	0.	10.	25.	33.	33.	98.	3.	0.	0.	93.	0.	5.	3.	0.	95.	5.	48.	10.	43.	0.	58.	38.	5.	0.	0.	0.	99.	0.
26	35	0.	0.	6.	34.	37.	23.	97.	3.	0.	0.	94.	0.	0.	6.	0.	91.	9.	23.	20.	43.	14.	26.	69.	6.	0.	0.	0.	99.	0.
28	21	0.	0.	0.	48.	29.	24.	86.	14.	0.	0.	95.	0.	0.	5.	0.	90.	10.	24.	19.	52.	5.	33.	52.	14.	0.	0.	0.	95.	5.
30+	39	0.	0.	9.	49.	33.	10.	97.	3.	0.	0.	95.	3.	0.	0.	3.	97.	3.	38.	18.	41.	3.	31.	67.	3.	0.	0.	0.	99.	0.
TOTAL	2843	0.	0.	2.	14.	38.	45.	95.	3.	1.	0.	98.	1.	0.	0.	0.	98.	2.	51.	13.	27.	8.	64.	31.	4.	1.	0.	0.	99.	0.

DIAMETER SUMMARY AND TREE DESCRIPTION TABLE FOR UNIT 284
(PERCENT OF TOTAL NUMBER OF TREES)

DBH CLASS	NO. OF TREES	CONDITION CLASS 0	20	40	60	80	100	VIGOR CLASS GD.	FR.	PR.	DD.	REMOVAL CLASS NO	IMM	1YR	2YR	3YR	SURVIVE YES	PRUNING CLASS NO	NO	1YR	2YR	3YR	CROWN 0	DEADWOOD CLASS 1+	11+	26+	51+	76++	SPLIT NO	YES
0+	30	0.	0.	7.	7.	43.	43.	93.	0.	7.	0.	99.	0.	0.	0.	0.	93.	7.	27.	13.	53.	7.	40.	57.	3.	0.	0.	0.	99.	0.
2	91	1.	1.	1.	7.	25.	65.	89.	8.	1.	2.	98.	1.	1.	0.	0.	98.	2.	31.	43.	22.	4.	43.	51.	3.	0.	1.	2.	99.	0.
4	57	0.	0.	0.	14.	28.	58.	96.	4.	0.	0.	99.	0.	0.	0.	0.	99.	0.	39.	23.	7.	32.	44.	53.	4.	0.	0.	0.	99.	0.
6	67	0.	3.	0.	13.	45.	39.	97.	0.	3.	0.	99.	0.	0.	0.	0.	97.	3.	45.	13.	10.	31.	54.	43.	0.	1.	1.	0.	99.	0.
8	67	0.	0.	0.	13.	31.	55.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	40.	15.	13.	31.	55.	45.	0.	0.	0.	0.	99.	0.
10	64	0.	0.	2.	8.	41.	50.	98.	2.	0.	0.	99.	0.	0.	0.	0.	99.	0.	42.	13.	11.	34.	59.	38.	3.	0.	0.	0.	99.	0.
12	40	0.	0.	3.	13.	35.	50.	99.	0.	0.	0.	99.	0.	0.	0.	0.	98.	3.	43.	3.	18.	38.	50.	48.	3.	0.	0.	0.	95.	5.
14	24	0.	0.	0.	17.	42.	42.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	38.	21.	17.	25.	50.	50.	0.	0.	0.	0.	96.	4.
16	13	0.	0.	0.	46.	38.	15.	92.	8.	0.	0.	99.	0.	0.	0.	0.	99.	0.	23.	8.	0.	69.	8.	85.	8.	0.	0.	0.	99.	0.
18	10	0.	0.	10.	20.	50.	20.	90.	10.	0.	0.	99.	0.	0.	0.	0.	99.	0.	30.	0.	0.	70.	30.	70.	0.	0.	0.	0.	99.	0.
20	1	0.	0.	0.	99.	0.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	0.	0.	99.
22	1	0.	0.	0.	0.	0.	99.	99.	0.	0.	0.	99.	0.	0.	0.	0.	99.	0.	99.	0.	0.	0.	99.	0.	0.	0.	0.	0.	99.	0.
TOTAL	465	0.	1.	1.	12.	35.	51.	96.	3.	1.	0.	99.	0.	0.	0.	0.	98.	2.	38.	19.	16.	27.	48.	49.	2.	0.	0.	0.	99.	1.

PLANTING RECOMMENDATION TABLE FOR THE CITY

SPECIE	DIAMETER SIZE					TOTAL
	0.0+	1.0+	2.0+	3.0+	4.0+	
ASH-GR	0	0	148	0	0	148
ASH-WH	1	3	407	0	0	411
BASSW	0	0	3	0	0	3
COFF-K	0	0	7	0	0	7
CORK-A	0	0	8	0	0	8
CRAB-F	0	0	56	0	0	56
ELM-SP	0	0	1	0	0	1
GINKGO	0	0	64	0	0	64
HACKBY	0	0	130	0	0	130
HAWT-H	0	0	155	0	0	155
HONEY	0	0	605	0	0	605
HORN-B	0	0	3	0	0	3
HORSE	0	0	13	0	0	13
LIND-L	0	0	262	0	0	262
LIND-S	0	0	6	0	0	6
MAP-NO	0	0	312	0	0	312
MAP-RE	0	0	28	0	0	28
MAP-SI	0	1	5	0	0	6
MAP-SU	0	0	3	0	0	3
OAK-EN	4	0	69	0	0	73
OAK-RE	0	0	2	0	0	2
OAK-SP	0	0	5	0	0	5
****** TOTAL ******						
22	5	4	2292	0	0	2301

PLANTING RECOMMENDATION TABLE FOR UNIT 284

SPECIE	DIAMETER SIZE					TOTAL
	0.0+	1.0+	2.0+	3.0+	4.0+	
ASH-GR	0	0	15	0	0	15
ASH-WH	0	3	14	0	0	17
GINKGO	0	0	1	0	0	1
HACKBY	0	0	2	0	0	2
HONEY	0	0	9	0	0	9
HORSE	0	0	4	0	0	4
LIND-L	0	0	14	0	0	14
MAP-RE	0	0	2	0	0	2
OAK-EN	0	0	4	0	0	4
****** TOTAL ******						
9	0	3	65	0	0	68

FIELD WORK SHEET

UNIT	STREET	BLOCK	COOR	SIDE	TREE SPACE	SPECIE NAME	DBH INCH	TREE PRESENT	COND. CLASS%	VIGOR CLASS%	REMOVAL CLASS	PRUNING CLASS	REPLANT ?	SURVIVE 10 YR?	SPLIT CROTCH?	DEADWOOD CROWN %	PLANT SPEC.	CARD NUMBER
284	055	600	S	W	5	MAP-SI	16.0	YES	60	GOOD	NO	3-5 YR	NO	YES	NO	1-10		546
284	055	600	S	W	6	MAP-SI	16.0	YES	80	GOOD	NO	3-5 YR	NO	YES	NO	1-10		547
284	055	700	S	E	1	ASH-WH	2.0	NO	0								RP RES	332
284	055	700	S	E	2	ASH-WH	2.0	NO	0								RP RES	333
284	055	700	S	E	3	MAP-RE	4.0	YES	100	GOOD	NO	NO	NO	YES	NO	NONE		334
284	055	700	S	E	4	MAP-RE	5.0	YES	100	GOOD	NO	NO	NO	YES	NO	NONE		335
284	055	700	S	E	5	MAP-SU	12.0	YES	100	GOOD	NO	NO	NO	YES	NO	NONE		336
284	055	700	S	E	6	MAP-SU	11.0	YES	100	GOOD	NO	2-3 YR	NO	YES	NO	NONE		337
284	055	700	S	E	7	MAP-NO	7.0	YES	100	GOOD	NO	2-3 YR	NO	YES	NO	NONE		338
284	055	700	S	E	8	MAP-SU	10.0	YES	100	GOOD	NO	NO	NO	YES	NO	NONE		339
284	055	700	S	W	1	MAP-SU	8.0	YES	80	GOOD	NO	NO	NO	YES	NO	1-10		548
284	055	700	S	W	2	MAP-SU	6.0	YES	80	GOOD	NO	NO	NO	YES	NO	1-10		549
284	055	700	S	W	3	MAP-RE	6.0	YES	80	GOOD	NO	3-5 YR	NO	YES	NO	1-10		550
284	055	700	S	W	4	MAP-RE	6.0	YES	80	GOOD	NO	3-5 YR	NO	YES	NO	1-10		551
284	055	700	S	W	5	MAP-RE	6.0	YES	80	GOOD	NO	3-5 YR	NO	YES	NO	1-10		552
284	055	700	S	W	6	MAP-RE	10.0	YES	60	GOOD	NO	3-5 YR	NO	YES	NO	1-10		553
284	055	700	S	W	7	MAP-RE	7.0	YES	80	GOOD	NO	3-5 YR	NO	YES	NO	1-10		554
284	055	700	S	W	8	MAP-NO	2.0	YES	0	DEAD	IMMED.	NO	YES	NO	NO	76-100		555
284	055	800	S	E	1	MAP-SU	2.0	YES	100	GOOD	NO	2-3 YR	NO	YES	NO	NONE		340
284	055	800	S	E	2	MAP-SU	2.0	YES	100	GOOD	NO	2-3 YR	NO	YES	NO	NONE		341

STREET TREE INVENTORY – FIELD SURVEY FORM

1. CONTROL INFORMATION

Serial _____ Crew _____ Month _____ Day _____

2. SPECIFIC TREE LOCATION

Location _____

3. GENERAL SITE LOCATION

Ward No. _____

Street No. _____ Street Name _____

A/C Side Street _____

4. GENERAL SITE DESCRIPTION

Special Codes
1) playground
2) vacant lot
3) hospital
4) school
5) med. strip
6) bank
7) church
8) airport
9) other – specify _____
10) none

Land Use
1) residential
2) commercial
3) industrial
4) recreational
5) undeveloped
6) downtown

5. SPECIFIC TREE SITE DESCRIPTION

a. Tree Lawn Width
2) 2 feet
3) 3 feet
4) 4 feet
5) 5 feet
6) 6 feet
7) 7 feet and up
8) on other side
9) no sidewalk
10) container

b. Raised Sidewalk
1) 1- 2 in.
2) 2- 4 in.
3) 4- 7 in.
4) 7-10 in.
0) not raised

c. Overhead Lines
1) 10-20 feet
2) 20-30 feet
3) 30 feet and up
0) none

d. Str. Lgt. Clear.
1) inadequate
0) adequate

e. Traffic Triangle
1) tree w/i tri.
0) tree not w/i tri.

f. Bldg. Clear.
1) inadeq (w/3' of bldg.)
0) adeq (not w/3' of bldg.)

g. Stop Sign Clearance
1) inadeq (obscured)
0) adeq (not obscured)

6. SPECIFIC TREE DESCRIPTION

a. Species _____

b. Year Planted _____

c. DBH _____

d. Height
1) 0-15 feet
2) 15-30 feet
3) 30-45 feet
4) 45 feet and up

e. Crown Spread
1) 0-10 feet
2) 10-20 feet
3) 20-30 feet
4) 30-40 feet
5) 40-50 feet
6) 50-60 feet
7) 60-70 feet
8) 70-80 feet
9) 80 feet and up

f. Deadwood (%)
1) less than 25%
2) 25- 50%
3) 50- 75%
4) 75-100%

g. Largest Dead Limb
1) 1- 4 in.
2) 4- 8 in.
3) 8-12 in.
4) 12 in. and up

h. Lowest Limb
1) 0- 6 feet
2) 6- 8 feet
3) 8-10 feet
4) 10 feet and up

i. Mechanical Damage (% circ. affected)

Root Damage
1) 25% affected
2) 25- 50% affected
3) 50- 75% affected
4) 75-100% affected
0) none

Trunk Damage
1) 25% affected
2) 25- 50% affected
3) 50- 75% affected
4) 75-100% affected
0) none

j. Cavity
1) minor
2) moderate
3) severe
0) none

k. Crotch Split
1) minor
2) moderate
3) severe
0) none

l. Seam
1) minor
2) moderate
3) severe
0) none

m. Vigor
1) good
2) fair
3) poor
4) dead

n. Stump/Snag
1) present

o. Disease 1

Type
1) leaf
2) dieback/decline
3) planting shock
4) canker
5) root rot
6) heart, sap rot
7) leaf scortch
8) chlorosis
9) wetwood
0) none

Extent
1) light
2) moderate
3) heavy

Disease 2

Type
1) leaf
2) dieback/decline
3) planting shock
4) canker
5) root rot
6) heart, sap rot
7) leaf scortch
8) chlorosis
9) wetwood
0) none

Extent
1) light
2) moderate
3) heavy

p. Insect 1

Type
1) leaf eating
2) sap sucking
3) meristematic
4) gall
5) borers
0) none

Extent
1) light
2) moderate
3) heavy

Insect 2

Type
1) leaf eating
2) sap sucking
3) meristematic
4) gall
5) borers
0) none

Extent
1) light
2) moderate
3) heavy

ASPLUNDH ENVIRONMENTAL SERVICES
BLAIR MILL ROAD
WILLOW GROVE, PA. 19090

Tree Partitioning - Level III Suggested Code Descriptions

Block Descriptions Items

1 Zone (X) Zone - Codes 1 thru 9 as delineated on master map

Block Number (XXX) Blk No. - Codes 001 thru 999 as delineated on master map.

Kind Area (X)	Street Configuration (X) SC	Slope (X) SL	Lawn Arrangement (X) LA
1 - Residential	1 - Square or rectangular	1 - 0-9%	1 - Street lawn
2 - Commercial	2 - Curving or arched	2 - 10-24%	2 - Street sidewalk lawn
3 - Industrial	3 - Irregular	3 - 25%+	3 - Street lawn sidewalk
4 - Other & (User defined)	4 - Other (User defined)		4 - Other
Code for greatest R.O.W. area			

Side Description Items

Side No. (X) Side # (Prenumbered on form)

Codes 1-4. The "Side line may be crossed out to continue tally of a large number of trees on a long side.

Length (XXXX) Length

Length of ground area along road measured in feet including driveway crossings and other minor inclusions.

Width (XX) Width

Width of ground area included in the R.O.W. It will usually consist of one strip of land but on occasion may consist of two or more strips.

Road Class (X) Rd. Cl.	Utilities (X) UTY	Corner Visibility	
1-Federal or State Highway	0-No utility conflicts	1 Good-City-R.O.W.	5 Poor-low foliage-Private prop
2-City	1-Overhead	2 Poor-Low-foliage-City R.O.W.	6 Poor-high foliage-Private prop
3-Alley	2-Underground	3 Poor-High-foliage-city R.O.W.	7 Poor-Structure-Private prop
4-Other (User defined)	3-Both	4 Poor-Structure-City R.O.W.	

Tree Description Items

Tree No. (XX) Tree # (Partly numbered on form)

Trees numbered consecutively. Start with No. 1 on each side. Codes 1-99 acceptable. Room for tallying 116 trees on each form.

Species (XX) Spec. (Codes should change for each city situation)

99 Pond. Pine	89 Sycamore	79 Green Ash*	69 Silver Maple	59 Ariz.Alder	49 Aspen	39
98 Other Pine	88	78	68	58	48	38
97	87 Apples & Pears	77 Rio G. Cotton	67 Amer. Elm	57 Osage Orange	47	37
96 Eng. Spruce	86 Apricot & Peach	76 *	66 Siberian Elm*	56	46	36
95 C.Bl.Spruce	85 Cherry & Plum	75 Globe Willow	65 Chinese Elm	55	45 Lom. Pop	35 Ailanthus
94 Pinon Pine	84 Black Locust	74 Other Willow	64	54	44	34
93 Doug. Fir	83 Catalpa	73	63 Mulberry	53	43 Rus. Olive	33
92 White Fir	82 Honey Locust	72	62 Horse Chestnut	52	42	32
91 Other Firs	81	71 Mtn. Ash	61	51	41	31
90 Junipers	80 Norway Maple*	70	60	50 Box Elder*	40	30

* Major Species - Individual answers (Variable by city)

meter Class (XX) Dia. Cl.

Record estimated or measured diameter class in 1" classes. Diameter point is 4 1/2 feet above ground level. Round to nearest class

Height Class (X) Ht. Cl.

Record tree height in estimated ten foot classes. Record the ten's digit only. Round to nearest class.

Tree Condition (X) \ Tree diameter	Under 12"	12-23"	24" +
Good vigor - Healthy foliage, Occasional dead limb - no visible rot - No trunk impaction	9	8	7
Medium vigor - couple large dead limbs allowed - Some rot in stem - Restricted ground surface	8	6	5
Poor vigor - Crown about 1/3-stem rot or bleeding areas - weak crotch-several large dead limbs - severly restricted ground area.	7	4	3

Location (X) Loc

9 - Feature or Historic tree
8 - Average lot & landscape tree, Park tree, strategic location
7 - Malls, public areas, city streets and boulevards, picnic areas, windbreaks, recreation areas
6 - Industrial areas, narrow alleys
5 - Open woody areas
4 - Dense woody areas

Action Needed (X) Act. Record user's opinion of action to initiate on the tree at this point in time.

0 - No action
1 - Category I tree removal - continual & repeated exposure to travelway, high priority
2 - Category II tree removal - occasional or sporatic exposure to travelway, moderate priority
3 - Major stem removal 6"+ dia. over travelways, buildings and development conflicts
4 - Beneficial major stem removal-6"+ dia - benefit tree health - cosmetic
5 - Pruning - Category III (falling or obstruction Potential)-necessary for tree health & sanitation purposes or small tree shaping, building contacts-high priority *
6 - Pruning - cosmetic - Low priority *
7 - Tree removal - No room for tree, poor vigor - not necessary to replace
8 - Tree removal with replacement - Poor vigor tree in desirable location
9 - Work needed to improve tree - cavity,correct poor pruning, braces, guy wires.

*Pruning for overhead wires is no cause for action.

Spot Establishment Items

Spot establishment items are recorded starting in the lower right corner of each "side" tally. Record from the bottom up.

Spot No. (XX) - Spot #

Number spots consecutively upward. Room to tally about 29 spots on each side if needed

ST. Suggestions (XX) Est. Sug.	(XX)	(XX)	(X)	(X)
ax ht. 15,30,60 foot classes	Crown width 20,40,60 foot classes	Width of ground space in feet	Location (same as above)	Planting objective Defined by user 1 2 3 4

TRESYSTM Tree Survey Form

date *(mm/dd/yy)* | area | map | site class

address | street | landscape code

TREES AT THIS ADDRESS

- serial number
- serial decimal
- X coordinate
- Y coordinate
- location code
- traffic code
- wires
- gas lines
- water/sewer

enter: 1=yes 2=no 3=unknown

- distance to curb
- height restriction
- crown spread restrict.
- planting space width
- planting space length
- planting space code
- genus code
- species code
- cultivar code
- DBH *inches*
- height *feet*
- crown spread *feet*
- foliage condition
- injury cause(s)
- branch condition
- injury cause(s)
- trunk condition
- injury cause(s)
- work needed
- work done
- notes

CONSULT INSTRUCTIONS FOR EXPLANATION OF CODES

location codes
1=*normal*
2=*around corner*
3=*on median*
4=*setback*
5=*median, around corner*
6=*setback, around corner*
7=*park or mall*
8,9=*local code*

traffic codes 1=*light* 2=*medium* 3=*heavy*

planting space codes
1=*open area, roots not restricted*
2=*continuous strip*
3=*restricted strip*
4=*in sidewalk, unpaved*
5=*in sidewalk, pervious pavement*
6=*in sidewalk, impervious pavement*
7=*in container*

foliage/branch cond. codes
0=*unrated*
1=65 - 100% *injured*
2=45 - 60%
3=25 - 40%
4= 5 - 10%
5=*no injuries*

trunk condition codes
1=*tree dead*
2=*severe injuries/decay*
3=*moderate*
4=*slight*
5=*no injuries or decay*

probable causes of injury
P=*parasitic disease*
M=*mechanical*
N=*nutrient deficiency*
A=*air pollution*
D=*drought* S=*salt*
F=*frost* U=*unknown*
H=*heat* W=*wind*
I=*insects* O=*other*

work codes
A=*cabling* P=*plant*
B=*bracing* R=*remove*
C=*cavity work* S=*spray*
D=*trim, prune* W=*water*
F=*fertilize* O=*other*
G=*stump removal*
T=*site treatment*

APPENDIX 47.

Review of the Expected Information Requirements for the Vancouver Boulevard Tree Resource

INVENTORY LOCATIONAL INFORMATION

Site Base Data

Street or Avenue Name

Lock

Map Co-ordinates

Side of Street

Air Photo Number

Field Map Number

Management Unit Number

Sector Number

Field Data Collection Form:

Recorder Name

Card No.

Day

Month

Year

Account No.

INVENTORY RECORD FORM DATA

Tree Base Data:

Family
Genus
Species
Variety
Common Name
Planting Date
Spacing
Ultimate Height
Ultimate Spread
Replacement Age
Design Attributes
Special Problems
Special Importance
Other

Tree Changing Data:

Present Height
Crown Size
Crown Shape
Diameter at Breast Height
Height of Lowest Limb
Leaning
Buttressing
Underplanting

Site Changing Data:

Planting Strip Wood
Planting Strip Ground Cover
Sidewalk Pit Size
Sidewalk Pit Cover
Curbs
Tree Center Line from Curb
Container
Overhead Utility Height
Overhead Utility Voltage
Underground Utility Depth
Underground Utility Voltage
Sewer Interference
Street Light
Street Sign
Other Street Furniture
Canopies

Other Constraints
Locale Land Use
Site Land Use
Zoning
Street Type
Street Designation
Street Traffic Volume
Right-of-Way Widths

Tree Condition:

Vigor
Percent Deadwood in Crown
Major Cavity
Minor Cavity
Crotch Split
Crotch Angle
Girdling Roots
Drought Crack
Bark Damage
Trunk Damage
Root Damage
Branch Damage
Insect Damage
Disease Damage
Air Pollution Damage
Stress
Unhealed Scar
Vandalized

Small Tree Maintenance:

Trimming
Sucker Control
Watering
Fertilizing
Stake and Tie Repair
Stake and Tie Removal
Wound Repair
Weed and Grass Control
Special Care
Tree Guards
Tree Gratings
Ornamental Lights
Base Planting
Other
Replacement

General Tree Maintenance:

Trimming
Pruning
Low Branching
Stake and Tie Replacement
Stake and Tie Removal
Internal Testing
Root Control
Water Sprout Control
Sucker Control
Leaf Control
Fruit Control
Insect Control
Disease Control
Other Pest Control
Tree Surgery
Fertilizing
Sidewalk Damage
Curb Damage
Other Damage
Replacement
Replacement Difficulty
Merchantable Use

APPENDIX 48.

Abbreviated Form of six categories of Data Collection that would be required for an adequate Tree Inventory

1. Site Base Data

   Street Home
   Map Co-ordinates
   Management Unit

2. Site Changing Data

   Tree Pit or Lawn
   Container
   Overhead Obstructions
   Zoning

3. Site Base Data

   Genus
   Species
   Common Name
   Planting Date (if known)
   Spacing

4. Tree Changing Data

   Tree Height
   Tree Trunk Diameter
   Height to Lowest Limb

5. Tree Condition

   Crown Deadwood
   Bark Damage
   Insects
   Disease
   Splits
   Cavities

6. General Tree Maintenance

   Complaints
   Trimming
   Pruning
   Stakes and Ties
   Sucker Control
   Insects and Disease
   Surgery
   Sidewalk Damage
   Sewer Blockage

APPENDIX 49

Suitable Tree Identification Codes for Compilation of a Boulevard Tree Inventory

Last Revised October 5, 1978

C. J. Sacksteder

This is a complete listing of all TRESYSTM codes for genera, species, and varieties or cultivars. For each kind of tree the first two letters of the code are for the genus name, the next two are for the species name, and the last two are for the cultivar or variety name, if there is one.

Trees are listed in alphabetic order by scientific name. If you do not know the species, at least record the genus name. A shorter list of codes of trees common in your city that will be easier to refer to should be made prior to the survey. If a code does not exist for a tree, write out the latin name near the space provided for the code. A code will be assigned by the processing office at a later date.

Code	Latin Name	Common Name
AB	Abies sp.	Fir
ABCO	Abies concolor	White Fir
ABFR	Abies fraseri	Fraser Fir
ABHO	Abies homolepis	Nikko Fir
ABKO	Abies koreana	Korean Fir
ABMA	Abies magnifica	Red Fir
ABPI	Abies pinsapo	Spanish Fir
ABPR	Abies procera	Noble Fir
ABSP	Abies spectabilis	Himalayan Fir
ABVE	Abies veitchii	Veitch Fir
AA	Acacia sp.	Acacia or Wattle
AC	Acer sp.	Maple
ACAR	Acer argutum	Maple
ACBU	Acer buergerianum	Trident Maple
ACCA	Acer campestre	Hedge Maple
ACCP	Acer capillipes	Maple
ACCR	Acer carpinifolium	Hornbeam Maple
ACCI	Acer circinatum	Vine Maple
ACDA	Acer davidii	David Maple
ACDI	Acer diabolicum	Red Devil Maple
ACGI	Acer ginnala	Amur Maple
ACGL	Acer glabrum	Rocky Mountain Maple
ACGR	Acer griseum	Paperbark Maple
ACJA	Acer japonicum	Fullmoon Maple
ACLO	Acer lobelii	Lobel Maple
ACMC	Acer macrophyllum	Bigleaf Maple
ACMN	Acer mandshuricum	Manchurian Maple
ACMI	Acer miyabei	Miyabe Maple
ACMO	Acer monspessulanum	Montpelier Maple
ACNE	Acer negundo	Boxelder
ACNI	Acer nigrum	Black Maple
ACNIGC	Acer nigrum 'Greencolumn'	Greencolumn Sugar Maple
ACNK	Acer nikoense	Nikko Maple
ACOP	Acer opalus	Italian Maple
ACPA	Acer palmatum	Japanese Maple
ACPABG	Acer palmatum 'Bloodgood'	Bloodgood Japanese Red Maple
ACPABL	Acer palmatum 'Burgundy Lace'	Burgundy Lace Japanese Maple
ACPACQ	Acer palmatum 'Crimson Queen'	Crimson Queen Japanese Maple
ACPAER	Acer palmatum 'Ever-red'	Ever-red Japanese Maple
ACPAGR	Acer palmatum 'Green'	Green Japanese Maple
ACPAOB	Acer palmatum 'Oshio Beni'	Oshio Beni Japanese Maple
ACPASK	Acer palmatum 'Sango-Kaku'	Coral Bark Maple
ACPAVI	Acer palmatum 'Viridis'	Japanese Green Lace Maple
ACPAAT	Acer palmatum atropurpureum	Japanese Red Maple
ACPADI	Acer palmatum dissectum	Threadleaf Japanese Maple
ACPASU	Acer palmatum suminagashi	Suminagashi Japanese Maple
ACPE	Acer pennsylvanicum	Striped Maple
ACPL	Acer platanoides	Norway Maple
ACPLAL	Acer platanoides 'Almira'	Almira Norway Maple
ACPLCA	Acer platanoides 'Cavalier'	Cavalier Norway Maple
ACPLCV	Acer platanoides 'Cleveland II'	Cleveland II Norway Maple
ACPLCL	Acer platanoides 'Cleveland'	Cleveland Norway Maple
ACPLCO	Acer platanoides 'Columnare'	Columnar Norway Maple
ACPLCK	Acer platanoides 'Crimson King'	Crimson King Norway Maple
ACPLCS	Acer platanoides 'Crimson Sentry'	Crimson Sentry Norway Maple
ACPLCU	Acer platanoides 'Cutleaf'	Cutleaf Norway Maple
ACPLDR	Acer platanoides 'Drummondi'	Silver Variegated Norway Maple
ACPLEQ	Acer platanoides 'Emerald Queen'	Emerald Queen Norway Maple

Code	Latin Name	Common Name
ACPLER	Acer platanoides 'Erectum'	Erect Norway Maple
ACPLFA	Acer platanoides 'Fassen'	Fassen Norway Maple
ACPLGL	Acer platanoides 'Globosum'	Globehead Norway Maple
ACPLGR	Acer platanoides 'Greenlace'	Greenlace Norway Maple
ACPLJG	Acer platanoides 'Jade Glen'	Jade Glen Norway Maple
ACPLMV	Acer platanoides 'M-VI'	M-VI Norway Maple
ACPLOL	Acer platanoides 'Olmsted'	Olmsted Norway Maple
ACPLPS	Acer platanoides 'Pleasant Street'	Pleasant Street Norway Maple
ACPLRC	Acer platanoides 'Royal Crimson'	Royal Crimson Norway Maple
ACPLRR	Acer platanoides 'Royal Red'	Royal Red Norway Maple
ACPLSC	Acer platanoides 'Schwedleri'	Schwedler Norway Maple
ACPLSV	Acer platanoides 'Silver Variegated'	Silver Variegated Norway Maple
ACPLSS	Acer platanoides 'Summershade'	Summershade Norway Maple
ACPLSF	Acer platanoides 'Superform'	Superform Norway Maple
ACPS	Acer pseudoplatanus	Sycamore Maple
ACPSSP	Acer pseudoplatanus 'Spaethii'	Spaeth Pinkleaf Maple
ACPSPY	Acer pseudoplatanus pyramidalis	Pyramidal Sycamore Maple
ACRU	Acer rubrum	Red Maple
ACRUAS	Acer rubrum 'Armstrong II'	Armstrong II Red Maple
ACRUAR	Acer rubrum 'Armstrong'	Armstrong Red Maple
ACRUAF	Acer rubrum 'Autumn Flame'	Autumn Flame Red Maple
ACRUBH	Acer rubrum 'Bowhall'	Bowhall Red Maple
ACRUCW	Acer rubrum 'Columnar Walters'	Walter's Columnar Red Maple
ACRUCO	Acer rubrum 'Columnare'	Columnar Red Maple
ACRUCR	Acer rubrum 'Curtis Red'	Curtis Red Maple
ACRUGE	Acer rubrum 'Gerling'	Gerling Red Maple
ACRUOG	Acer rubrum 'October Glory'	October Glory Red Maple
ACRURS	Acer rubrum 'Red Sunset'	Red Sunset Maple
ACRUSC	Acer rubrum 'Scanlon'	Scanlon Red Maple
ACRUSS	Acer rubrum 'Scarlet Sentinal'	Scarlet Sentinal Red Maple
ACRUSH	Acer rubrum 'Schlesinger'	Schlesinger Red Maple
ACRUSK	Acer rubrum 'Shade King'	Shade King Red Maple
ACRUTI	Acer rubrum 'Tilford'	Tilford Red Maple
ACRUVJ	Acer rubrum 'V.J. Drake'	V.J. Drake Red Maple
ACSA	Acer saccharinum (dasycarpum)	Silver Maple
ACSABB	Acer saccharinum 'Beebe'	Cutleaf Weeping Silver Maple
ACSAPY	Acer saccharinum 'Pyramidal'	Pyramidal Silver Maple
ACSASQ	Acer saccharinum 'Silver Queen'	Silver Queen Maple
ACSASW	Acer saccharinum 'Silver Weeping'	Silver Weeping Maple
ACSAWI	Acer saccharinum 'Wieri'	Wier's Cutleaf Silver Maple
ACSALA	Acer saccharinum laciniatum	Cutleaf Silver Maple
ACSC	Acer saccharum	Sugar Maple
ACSCBF	Acer saccharum 'Bonfire'	Bonfire Sugar Maple
ACSCCO	Acer saccharum 'Columnare'	Columnar Sugar Maple
ACSCCL	Acer saccharum 'Cutleaf'	Cutleaf Sugar Maple
ACSCGO	Acer saccharum 'Goldspire'	Goldspire Sugar Maple
ACSCGM	Acer saccharum 'Green Mountain'	Green Mountain Sugar Maple
ACSCMO	Acer saccharum 'Monumentale'	Sentry Sugar Maple
ACSCSS	Acer saccharum 'Sweet Shadow'	Sweet Shadow Sugar Maple
ACSCTU	Acer saccharum 'Temple's Upright'	Temple's Upright Sugar Maple
ACSCDI	Acer saccharum dissectum	Sweet Shadow Sugar Maple
ACSCGL	Acer saccharum globosum	Globe Sugar Maple
ACSP	Acer spicatum	Mountain Maple
ACTA	Acer tataricum	Tatarian Maple
ACTR	Acer triflorum	Threeflower Maple
ACTC	Acer truncatum	Purpleblow Maple
ACTS	Acer tschonoskii	Tschonoski Maple
AE	Aesculus sp.	Horsechestnut or Buckeye
AECA	Aesculus carnea	Horsechestnut
AECABR	Aesculus carnea briotti	Ruby Red Horsechestnut
AEGL	Aesculus glabra	Ohio Buckeye
AEHI	Aesculus hippocastanum	Common Horsechestnut
AEHIBA	Aesculus hippocastanum baumanii	Baumann Horsechestnut
AEOC	Aesculus octandra	Sweet Buckeye
AEPA	Aesculus pavia	Red Buckeye
AEPASP	Aesculus pavia splendens	Flame Buckeye
AIAL	Ailanthus altissima	Tree of Heaven
AZJU	Albizia julibrissin	Mimosa Tree
AL	Alnus sp.	Alder
ALCO	Alnus cordata	Italian Alder
ALGL	Alnus glutinosa	European Black Alder
ALIN	Alnus incana	Gray Alder
ALRH	Alnus rhombifolia	Sierra Alder
ALRU	Alnus rugosa	Hazel
AM	Amelanchier sp.	Serviceberry

Code	Latin Name	Common Name
AMXXRH	Amelanchier 'Robin Hill Pink'	Robin Hill Pink Shadblow
AMCA	Amelanchier canadensis (arborea)	Downy Shadblow Serviceberry
AMFL	Amelanchier florida	Pacific Serviceberry
AMGR	Amelanchier grandiflora	Apple Serviceberry
AMHYCU	Amelanchier hybrida 'Cumulus'	Cumulus Shadblow
AMLA	Amelanchier laevis	Allegheny Serviceberry
AMOB	Amelanchier oblongifolia	Thicket Serviceberry
AUMA	Amur maackia	Maackia Amurensis
AREL	Aralia elata	Japanese Angelica Tree
ARSP	Aralia spinosa	Devils' Walking Stick
AXAR	Araucaria araucana	Monkey Puzzle Tree
ATME	Arbutus menziesii	Pacific Madrone
ATUN	Arbutus unedo	Strawberry Tree
ASTR	Asimina triloba	Paw Paw
BE	Betula sp.	Birch
BEAL	Betula alleghaniensis (lutea)	Yellow Birch
BEDA	Betula davurica	Dahurian Birch
BELA	Betula lanciniata	Weeping Birch
BELAPU	Betula lanciniata purpurea	Purple Weeping Birch
BELE	Betula lenta	Sweet Birch
BEMX	Betula maximowicziana	Monarch Birch
BENI	Betula nigra	River Birch
BEPA	Betula papyrifera	Paper or Canoe Birch
BEPE	Betula pendula (alba) (verrucosa)	European White Birch
BEPEPS	Betula pendula 'Purple Splendor'	Purple Splendor Weeping Birch
BEPEFA	Betula pendula fastigiata	Pyramidal European Birch
BEPELA	Betula pendula laciniata	Weeping Cutleaf Birch
BEPEPU	Betula pendula purpurea	Purple Leaf Birch
BEPEYO	Betula pendula youngii	Young's Weeping Birch
BEPL	Betula platyphylla	Asian White Birch
BEPLSZ	Betula platyphylla szechuanica	Manchurian Birch
BEPO	Betula populifolia	Gray Birch
BYAC	Brachychiton acerifolium	Flame Bottle Tree
BYPO	Brachychiton populneum	Bottle Tree
BRPA	Broussonetia papyrifera	Paper Mulberry
CGAR	Caragana arborescens	Siberian Pea Tree
CA	Carpinus sp.	Hornbeam
CABE	Carpinus betulus	European Hornbeam
CABEFA	Carpinus betulus fastigiata	Pyramidal European Hornbeam
CABEPU	Carpinus betulus purpurea	Purple European Hornbeam
CABEQU	Carpinus betulus quercifolia	Oakleaf European Hornbeam
CACA	Carpinus caroliniana	American Hornbeam
CACAFA	Carpinus caroliniana fastigiata	Pyramidal American Hornbeam
CAJA	Carpinus japonica	Japanese Hornbeam
CY	Carya sp.	Hickory
CYCO	Carya cordiformis	Bitternut Hickory
CYGL	Carya glabra	Pignut Hickory
CYIL	Carya illinoensis	Pecan
CYLA	Carya laciniosa	Shellbark Hickory
CYOV	Carya ovata	Shagbark Hickory
CYTO	Carya tomentosa	Mockernut Hickory
CS	Castanea sp.	Chestnut
CSCR	Castanea crenata	Japanese Chestnut
CSMO	Castanea mollisima	Chinese Chestnut
CT	Catalpa sp.	Catalpa
CTBI	Catalpa bignonioides	Common Catalpa
CTBIAU	Catalpa bignonioides aurea	Golden Catalpa
CTHYPU	Catalpa hybrida purpurea	Purpleleaf Catalpa
CTOV	Catalpa ovata	Chinese Catalpa
CTSP	Catalpa speciosa	Northern Catalpa
CD	Cedrus sp.	Cedar
CDAT	Cedrus atlantica	Atlas Cedar
CDATGL	Cedrus atlantica glauca	Blue Atlas Cedar
CDDE	Cedrus deodara	Deodar Cedar
CDLI	Cedrus libani	Cedar of Lebanon
CE	Celtis sp.	Hackberry
CEAU	Celtis australis	European Hackberry
CELA	Celtis laevigata	Sugarberry
CEOC	Celtis occidentalis	Common Hackberry
CESI	Celtis sinensis	Chinese Hackberry
CPJA	Cercidiphyllum japonicum	Katsura Tree
CC	Cercis sp.	Redbud
CCCA	Cercis canadensis	Eastern Redbud
CCCAFP	Cercis canadensis 'Forest Pansy'	Forest Pansy Redbud
CCCAOK	Cercis canadensis 'Oklahoma'	Oklahoma Redbud

Code	Latin Name	Common Name
CCCAPC	Cercis canadensis 'Pink Charm'	Pink Charm Redbud
CCCARA	Cercis canadensis 'Ruby Atkinson'	Ruby Atkinson Redbud
CCCAAL	Cercis canadensis alba	White Eastern Redbud
CCCH	Cercis chinensis	Chinese Redbud
CCOC	Cercis occidentalis	Redbud
CCRA	Cercis racemosa	Raceme Redbud
CCSI	Cercis siliquastrum	Judas Tree
CH	Chamaecyparis sp.	Falsecypress
CHLA	Chamaecyparis lawsoniana	Port-Orford-Cedar
CHNO	Chamaecyparis nootkatensis	Nootka Falsecypress, Alaska-cedar
CHOP	Chamaecyparis obtusa	Hinoki Falsecypress
CHPI	Chamaecyparis pisifera	Sawara Falsecypress
CIVI	Chionanthus virginicus	White Fringetree
CNCA	Cinnamonum camphora	Camphor Tree
CLLU	Cladrastis lutea (tinctoria)	Yellowwood
CO	Cornus sp.	Dogwood
COAT	Cornus alternifolia	Pagoda Dogwood
COCO	Cornus controversa	Giant Dogwood
COFL	Cornus florida	Flowering Dogwood
COFLCC	Cornus florida 'Cherokee Chief'	Cherokee Chief Dogwood
COFLCP	Cornus florida 'Cherokee Princess'	Cherokee Princess Dogwood
COFLCL	Cornus florida 'Cloud 9'	Cloud 9 Flowering Dogwood
COFLFL	Cornus florida 'First Lady'	First Lady Dogwood
COFLGG	Cornus florida 'Green Glow'	Green Glow Dogwood
COFLHG	Cornus florida 'Holmans Gold'	Holmans Gold Dogwood
COFLRB	Cornus florida 'Rainbow'	Rainbow Dogwood
COFLRE	Cornus florida 'Red'	Red Dogwood
COFLSR	Cornus florida 'Sweetwater Red'	Sweetwater Red Dogwood
COFLWE	Cornus florida 'Welchi'	Tricolor Dogwood
COFLWC	Cornus florida 'White Cloud'	White Cloud Dogwood
COFLPE	Cornus florida pendula	Weeping Dogwood
COFLRU	Cornus florida rubra	Pink Flowering Dogwood
COKO	Cornus kousa	Chinese or Japanese Dogwood
COKOSS	Cornus kousa 'Summer Star'	Summer Star Dogwood
COMC	Cornus macrophylla	Largeleaf Dogwood
COMA	Cornus mas (mascula)	Cornelian Cherry
CONU	Cornus nutalli	Pacific Dogwood
CONUCG	Cornus nutalli 'Corigo Giant'	Corigo Giant Dogwood
CONUGS	Cornus nutalli 'Goldspot'	Goldspot Dogwood
CU	Corylus sp.	Filbert
CUAM	Corylus americana	American Filbert
CUCL	Corylus colurna	Turkish Filbert
CUCN	Corylus contorta	Contorted Filbert
CUMA	Corylus maxima	Filbert
CUMAPU	Corylus maxima purpurea	Purpleleaf Filbert
CR	Crataegus sp.	Hawthorn
CRXXVA	Crataegus 'Vaughn'	Vaughn Hawthorn
CRAR	Crataegus arnoldiana	Arnold Hqwthorn
CRCD	Crataegus calpodendron	Pear Hawthorn
CRCO	Crataegus coccinioides	Kansas Hawthorn
CRCR	Crataegus crus-galli	Cockspur Hawthorn
CRCRIN	Crataegus crus-galli inermis	Thornless Cockspur Hawthorn
CRIN	Crataegus intricata	Thicket Hawthorn
CRLA	Crataegus lavallei (carrieri)	Lavalle Hawthorn
CRMA	Crataegus macracantha	Hawthorn
CRMO	Crataegus mollis	Downy Hawthorn
CRMN	Crataegus monogyna	Single Seed Hawthorn
CRMNST	Crataegus monogyna 'Stricta'	Pyramidal Singleseed Hawthorn
CRMRTO	Crataegus mordensis 'Toba'	Toba Hawthorn
CRNI	Crataegus nitida	Glossy Hawthorn
CROX	Crataegus oxyacantha	English Hawthorn
CROXAG	Crataegus oxyacantha 'Autumn Glory'	Autumn Glory Hawthorn
CROXCC	Crataegus oxyacantha 'Crimson Cloud'	Crimson Cloud Hawthorn
CROXPA	Crataegus oxyacantha 'Paulii'	Paul's Scarlet Hawthorn
CROXPL	Crataegus oxyacantha plena	Double Flowering English Hawthorn
CRPH	Crataegus phaenopyrum (cordata)	Washington Hawthorn
CRPI	Crataegus pinnatifida	Chinese Hawthorn
CRPIMA	Crataegus pinnatifida major	Large Chinese Hawthorn
CRPF	Crataegus prunifolia	Plumleafthorn
CRPR	Crataegus pruniosa	Frosted Hawthorn
CRPU	Crataegus punctata	Dotted Hawthorn
CRPUOP	Crataegus punctata 'Ohio Pioneer'	Ohio Pioneer Hawthorn
CRSU	Crataegus succulenta	Fleshy Hawthorn
CRTO	Crataegus toba	Toba Hawthorn
CRVI	Crataegus viridis	Green Hawthorn

Code	Latin Name	Common Name
CRVIWK	Crataegus viridis 'Winter King'	Winter King Hawthorn
CMJA	Cryptomeria japonica	Japanese Cryptomeria
CMJAEL	Cryptomeria japonica elegans	Japanese Cedar
CMJALO	Cryptomeria japonica lobbi	Lobb Cryptomeria
DAIN	Davidia involucrata	Dove-tree
DERE	Delonix regia	Royal Poinciana, Flame Tree
DIKA	Diospyros kaki	Kaki Persimmon
DIVI	Diospyros virginiana	Common Persimmon
EL	Elaeagnus sp.	Olive
ELAN	Elaeagnus angustifolia	Russian Olive
ELUM	Elaeagnus umbellata	Autumn-olive
ERJA	Eriobotrya japonica	Loquat
EYAR	Erythea armata	Blue Erythea
EC	Eucalyptus sp.	Eucalyptus
EUUL	Eucommia ulmoides	Hardy Rubber Tree
EGPA	Eugenia paniculata	Cherry Egenia
EGSM	Eugenia smithii	Lili-Pili Tree
EGUN	Eugenia uniflora	Surinam Cherry
FA	Fagus sp.	Beech
FAGR	Fagus grandifolia	American Beech
FASYLA	Fagus sylvataca laciniata	Cutleaf Beech
FASY	Fagus sylvatica	European Beech
FASYAS	Fagus sylvatica 'Asplenifolia'	Fernleaf Beech
FASYAT	Fagus sylvatica 'Atropunicea'	Purple Beech
FASYDW	Fagus sylvatica 'Dawycki'	Dawycki Beech
FASYFA	Fagus sylvatica 'Fastigiata'	Pyramidal Beech
FASYPE	Fagus sylvatica 'Pendula'	Weeping Beech
FASYPP	Fagus sylvatica 'Purpureo-pendula'	Weeping Copper Beech
FASYRV	Fagus sylvatica 'Riversii'	River's Purple Beech
FASYRO	Fagus sylvatica 'Rohanii'	Fernleaf Copper Beech
FASYSP	Fagus sylvatica 'Spaethiana'	Redleaf Beech
FASYTR	Fagus sylvatica 'Tricolor'	Tricolor Beech
FASYZL	Fagus sylvatica 'Zlatia'	Golden Beech
FI	Ficus sp.	Fig
FICA	Ficus carica	Common Fig
FIMA	Ficus macrophylla	Moreton Bay Fig
FMSI	Firmiana simplex	Chinese Parasol TRee
FKAL	Franklinia alatamaha	Franklinia
FX	Fraxinus sp.	Ash
FXAM	Fraxinus americana	White Ash
FXAMAA	Fraxinus americana 'Autumn Applause'	Autumn Applause Ash
FXAMAP	Fraxinus americana 'Autumn Purple'	Autumn Purple White Ash
FXAMCC	Fraxinus americana 'Champagne County'	Champagne County Ash
FXAMRH	Fraxinus americana 'Rosehill'	Rosehill Ash
FXANDP	Fraxinus angustifolia 'Doctor Pirone'	Doctor Pirone Ash
FXEX	Fraxinus excelsior	European Ash
FXEXHE	Fraxinus excelsior 'Hessei'	Hesse European Ash
FXEXKB	Fraxinus excelsior 'Kimberly'	Kimberly Blue Ash
FXEXRA	Fraxinus excelsior 'Rancho'	Rancho European Ash
FXEXPE	Fraxinus excelsior pendula	European Weeping Ash
FXEXUM	Fraxinus excelsior ubraculifera	Improved European Globe Ash
FXHO	Fraxinus holotricha	Baltic Ash
FXHOMO	Fraxinus holotricha 'Moraine'	Moraine Baltic Ash
FXLA	Fraxinus latifolia (oregona)	Oregon Ash
FXMA	Fraxinus mariesii	Maries' Ash
FXOR	Fraxinus ornus	Flowering Ash
FXOX	Fraxinus oxycarpa	Ash
FXOXFL	Fraxinus oxycarpa 'Flame'	Flame Ash
FXOXGD	Fraxinus oxycarpa 'Golden Desert'	Golden Desert Ash
FXOXRW	Fraxinus oxycarpa 'Raywoodi'	Raywood Ash
FXOXAU	Fraxinus oxycarpa aureafolia	Gold Cloud Ash
FXPE	Fraxinus pennsylvanica	Green Ash
FXPEEM	Fraxinus pennsylvanica 'Emerald'	Emerald Green Ash
FXPEHS	Fraxinus pennsylvanica 'Honeyshade'	Honeyshade Green Ash
FXPEMA	Fraxinus pennsylvanica 'Marshall'	Marshall's Seedless
FXPESU	Fraxinus pennsylvanica 'Summit'	Summit Ash
FXQU	Fraxinus quadrangulata	Blue Ash
FXUH	Fraxinus uhdei	Shamel Ash
FXVE	Fraxinus velutina	Velvet Ash
FXVEGL	Fraxinus velutina glabra	Modesto Ash
GIBI	Ginkgo biloba	Ginkgo
GIBIMA	Ginkgo biloba (male clone)	Male Ginkgo
GIBIAG	Ginkgo biloba 'Autumn Gold'	Autumn Gold Ginkgo
GIBIFM	Ginkgo biloba 'Fairmount'	Fairmount Ginkgo
GIBILV	Ginkgo biloba 'Lakeview'	Lakeview Ginkgo

Code	Latin Name	Common Name
GIBIPG	Ginkgo biloba 'Princeton Gold'	Princeton Gold Ginkgo
GIBISE	Ginkgo biloba 'Sentry'	Princenton Sentry Ginkgo
GIBIFA	Ginkgo biloba fastigiata	Upright Ginkgo
GLAQ	Gleditsia aquatica	Water Locust
GLTR	Gleditsia triacanthos	Honeylocust
GLTRIN	Gleditsia triacanthos inermis	Thornless Honeylocust
GLTRCO	Gleditsia triacanthos 'Continental'	Contental Honeylocust
GLTRCG	Gleditsia triacanthos 'Cottage Green'	Cottage Green Honeylocust
GLTREL	Gleditsia triacanthos 'Emerald Lace'	Emerald Lace Honeylocust
GLTRFV	Gleditsia triacanthos 'Fairview'	Fairview Honeylocust
GLTRGL	Gleditsia triacanthos 'Globe'	Globe Honeylocust
GLTRGO	Gleditsia triacanthos 'Golden'	Golden Honeylocust
GLTRGA	Gleditsia triacanthos 'Green Arbor'	Green Arbor Honeylocust
GLTRGG	Gleditsia triacanthos 'Green Glory'	Green Glory Honeylocust
GLTRHA	Gleditsia triacanthos 'Halka'	Halka Honeylocust
GLTRIM	Gleditsia triacanthos 'Imperial'	Imperial Honeylocust
GLTRMJ	Gleditsia triacanthos 'Majestic'	Majestic Honeylocust
GLTRMX	Gleditsia triacanthos 'Maxwell'	Maxwell Honeylocust
GLTRMO	Gleditsia triacanthos 'Moraine'	Moraine Honeylocust
GLTRRL	Gleditsia triacanthos 'Rubylace'	Rubylace Honeylocust
GLTRSM	Gleditsia triacanthos 'Shademaster'	Shademaster Honeylocust
GLTRSL	Gleditsia triacanthos 'Skyline'	Skyline Honeylocust
GLTRSG	Gleditsia triacanthos 'Summergold'	Summergold Honeylocust
GLTRSB	Gleditsia triacanthos 'Sunburst'	Sunburst Honeylocust
GLTRTS	Gleditsia triacanthos 'True Shade'	True Shade Honeylocust
GOLA	Gordonia lasianthus	Loblolly Bay Gordonia
GRRO	Grevillea robusta	Silk Oak Greveillea
GYDI	Gymnocladus dioicus	Kentucky Coffeetree
HACA	Halesia carolina (tetraptera)	Carolina Silverbell
HAMO	Halesia monticola	Mountain Silverbell
HIRH	Hippophae rhamnoides	Common Sea Buckthorn
HYFL	Hymenosporum flavum	Sweet Shade
IL	Ilex sp.	Holly
ILAQ	Ilex aquifolium	English Holly
ILCA	Ilex cassine	Dahoon
ILDE	Ilex decidua	Possum Haw
ILLA	Ilex latiflolia	Lusterleaf Holly
ILMO	Ilex montana	Mountain Winterberry
ILOP	Ilex opaca	American Holly
ILPD	Ilex pedunculosa	Longstalk Holly
ILPR	Ilex pernyi	Perny Holly
JAAC	Jarcaranda acutifolia	Sharpleaf Jacaranda
JG	Juglans sp.	Walnut
JGCI	Juglans cinerea	Butternut
JGCO	Juglans cordiformis	Heartnut
JGHI	Juglans hindsii	Hinds Black Walnut
JGNI	Juglans nigra	Black Walnut
JGRE	Juglans regia	Persian Walnut
JN	Juniperus sp.	Juniper
JNCH	Juniperus chinensis	Chinese Juniper
JNCO	Juniperus communis	Common Juniper
JNCX	Juniperus coxii	Cox Jumiper
JNDR	Juniperus drupacea	Syrian Juniper
JNEX	Juniperus excelsa	Greek Juniper
JNLU	Juniperus lucayana	West Indies Juniper
JNPA	Juniperus pachyphlaea	Alligator Juniper
JNRI	Juniperus rigida	Needle Juniper
JNSC	Juniperus scopulorum	Rocky Mountain Juniper
JNVI	Juniperus virginiana	Eastern Redcedar
KAPI	Kalopanax pictus	Castor-aralia
KOBI	Koelreuteria bipinnata (formosana)	Chinese Flame Tree
KOPASG	Koelreuteria pan. 'September Gold'	September Goldenrain
KOPA	Koelreuteria paniculata	Goldenrain or Varnish Tree
LBAD	Laburnum adami	Purple Goldenchain
LBAL	Laburnum alpinum	Scotch Laburnum
LBALPE	Laburnum alpinum pendulum	Weeping Goldenchain
LBWA	Laburnum watereri	Goldenchain Tree
LBWAVO	Laburnum watereri 'Vossi'	Goldenchain
LGXXMO	Lagerstroemia 'Majestic Orchid'	Majestic Orchid Crapemyrtle
LGIN	Lagerstroemia indica	Common Crapemyrtle
LGINGR	Lagerstroemia indica 'Gray's Red'	Grays's Red Crapemyrtle
LGINRE	Lagerstroemia indica 'Red'	Red Crapemyrtle
LGINWH	Lagerstroemia indica 'White'	White Crapemyrtle
LGINRO	Lagerstroemia indica rosea	Rose Crapemyrtle
LGINRU	Lagerstroemia indica rubra	Red Crapemyrtle

Code	Latin Name	Common Name
LNPA	Lagunaria patersonii	Paterson Sugar Plum Tree
LX	Larix sp.	Larch
LXDE	Larix decidua	European Larch
LXLA	Larix larcina	Tamarack
LXLE	Larix leptolepis	Japanese Larch
LUNO	Laurus nobilis	Sweet Bay or Laurel
LEAE	Leucadendron argenteum	Silver Leucadendron
LCDE	Libocedrus decurrens (Calocedrus d.)	California Incensecedar
LIFO	Liquidambar formosana	Formosa Sweetgum
LIST	Liquidambar styraciflua	American Sweetgum
LISTBU	Liquidambar styraciflua 'Burgundy'	Burgundy Sweetgum
LISTFE	Liquidambar styraciflua 'Festival'	Festival Sweetgum
LISTMO	Liquidambar styraciflua 'Moraine'	Moraine Sweetgum
LISTPA	Liquidambar styraciflua 'Palo Alto'	Palo Alto Sweetgum
LISTVA	Liquidambar styraciflua 'Variegata'	Golden Sweetgum
LRTU	Liriodendron tulipifera	Yellow-poplar or Tuliptree
LRTUAR	Liriodendron tulipifera 'Arnold'	Arnold Tuliptree
LVAU	Livistona australis	Australian Fan Palm
MKAM	Maackia amurensis	Amur Maakia
MCPO	Maclura pomifera	Osage-orange
MG	Magnolia sp.	Magnolia
MGAC	Magnolia acuminata	Cucumbertree Magnolia
MGCO	Magnolia cordata	Yellow Cucumber Tree
MGDA	Magnolia dawsoniana	Dawson Magnolia
MGDE	Magnolia denudata (conspicus)	Yulan Magnolia
MGFR	Magnolia fraseri	Fraser Magnolia
MGGR	Magnolia grandiflora	Southern Evergreen Magnolia
MGGRMB	Magnolia grandiflora 'Majestic Beauty'	Majestic Beauty Magnolia
MGGRRU	Magnolia grandiflora 'Russet'	Russet Magnolia
MGGRSS	Magnolia grandiflora 'Samuel Sommer'	Samuel Sommer Magnolia
MGGRSM	Magnolia grandiflora 'St. Mary'	St. Mary's Magnolia
MGGRVI	Magnolia grandiflora 'Victoria'	Victoria Magnolia
MGKO	Magnolia kobus	Kobus Magnolia
MGKOBO	Magnolia kobus borealis	Kobus Magnolia
MGLINI	Magnolia liliflora 'Nigra'	Purple Lily Magnolia
MGLOME	Magnolia loebneri 'Merill'	Merill Magnolia
MGMA	Magnolia macrophylla	Bigleaf Magnolia
MGNI	Magnolia nitida	Shinyleaf Magnolia
MGOB	Magnolia obovata	Whiteleaf Japanese Magnolia
MGSA	Magnolia salicifolia	Anise Magnolia
MGSI	Magnolia sieboldii	Oyama Magnolia
MGSO	Magnolia soulangiana	Saucer Magnolia
MGSOAL	Magnolia soulangiana 'Alexandria'	Alexandria Magnolia
MGSORR	Magnolia soulangiana 'Rustica Rubra'	Red Saucer Magnolia
MGSP	Magnolia sprengeri	Sprenger Magnolia
MGST	Magnolia stellata	Star Magnolia
MGSTRS	Magnolia stellata 'Royal Star'	Royal Star Magnolia
MGTR	Magnolia tripetala	Umbrella Magnolia
MGVE	Magnolia vetchii	Veitch Magnolia
MGVI	Magnolia virginiana (glacua)	Sweetbay Magnolia
MGWA	Magnolia watsonii	Watson Magnolia
ML	Malus sp.	Crabapple or Apple
MLXXAD	Malus 'Adams'	Adams Crabapple
MLXXAH	Malus 'Aldenhamensis'	Aldenham Crabapple
MLXXAL	Malus 'Almey'	Almey Crabapple
MLXXAB	Malus 'American Beauty'	American Beauty Crabapple
MLXXBA	Malus 'Barbara Ann'	Barbara Ann Crabapple
MLXXBK	Malus 'Baskatong'	Baskatong Crabapple
MLXXBE	Malus 'Beauty'	Beauty Crabapple
MLXXBT	Malus 'Bechtel'	Bechtel Crabapple
MLXXBV	Malus 'Beverly'	Beverly Crabapple
MLXXBL	Malus 'Blanche Ames'	Blanche Ames Crabapple
MLXXBW	Malus 'Bob White'	Bob White Crabapple
MLXXCA	Malus 'Candied Apple'	Candied Apple Crabapple
MLXXCO	Malus 'Coralburst'	Coralburst Crabapple
MLXXCB	Malus 'Crimson Brilliant'	Crimson Brilliant Crabapple
MLXXDA	Malus 'David'	David Crabapple
MLXXDO	Malus 'Dolgo'	Dolgo Flowering Crabapple
MLXXDW	Malus 'Donald Wyman'	Donald Wyman Crabapple
MLXXDR	Malus 'Dorothea'	Dorothea Crabapple
MLXXEL	Malus 'Eleyi'	Eley Flowering Crabapple
MLXXEG	Malus 'Ellen Gerhart'	Ellen Gerhart Crabapple
MLXXEV	Malus 'Evelyn'	Evelyn Crabapple
MLXXFC	Malus 'Ferrill's Crimson'	Ferrill's Crimson Crabapple
MLXXFL	Malus 'Flame'	Flame Crabapple

Code	Latin Name	Common Name
MLXXGG	Malus 'Gibbs Golden Gage'	Gibbs Golden Gage Crabapple
MLXXGH	Malus 'Golden Hornet'	Golden Hornet Crabapple
MLXXGO	Malus 'Gorgeous'	Gorgeous Crabapple
MLXXGW	Malus 'Gwendolyn'	Gwendolyn Crabapple
MLXXHD	Malus 'Henry F. Dupont'	Henry F. Dupont Crabapple
MLXXHO	Malus 'Hopa'	Hopa Red Flowering Crabapple
MLXXIM	Malus 'Indian Majic'	Indian Majic Crabapple
MLXXKA	Malus 'Katherine'	Katherine Flowering Crabapple
MLXXLN	Malus 'Lady Northcliffe'	Lady Northcliffe Crabapple
MLXXMK	Malus 'Makamik'	Makamik Crabapple
MLXXMO	Malus 'Marshall Oyama'	Marshall Oyama Crabapple
MLXXMP	Malus 'Mary Potter'	Mary Potter Crabapple
MLXXMD	Malus 'Morden's 454'	Morden's 454 Crabapple
MLXXOE	Malus 'Oekonomierat Echtermeyer'	Oekonomierat Echtermeyer Crab
MLXXOR	Malus 'Ormiston Roy'	Ormiston Roy Crabapple
MLXXPC	Malus 'Pink Cascade'	Pink Cascade Crabapple
MLXXPP	Malus 'Pink Perfection	Pink Perfection Crabapple
MLXXPS	Malus 'Pink Spires'	Pink Spires Crabapple
MLXXPG	Malus 'Prince Georges'	Prince Georges Crabapple
MLXXPF	Malus 'Profusion'	Profusion Crabapple
MLXXPW	Malus 'Purple Wave'	Purple Wave Crabapple
MLXXRD	Malus 'Radiant'	Radiant Crabapple
MLXXRJ	Malus 'Red Jade'	Red Jade Crabapple
MLXXRW	Malus 'Red Jewel'	Red Jewel Crabapple
MLXXRS	Malus 'Red Silver'	Red Silver Crabapple
MLXXRI	Malus 'Ringo'	Ringo Crabapple
MLXXRK	Malus 'Rocki'	Rocky Crabapple
MLXXRO	Malus 'Rosseau'	Rosseau Crabapple
MLXXRR	Malus 'Royal Ruby'	Royal Ruby Crabapple
MLXXRY	Malus 'Royalty'	Royalty Crabapple
MLXXSK	Malus 'Selkirk'	Selkirk Crabapple
MLXXSM	Malus 'Silver Moon'	Silver Moon Crabapple
MLXXSI	Malus 'Sissipuk'	Sissipuk Crabapple
MLXXSN	Malus 'Snow'	Snow Crabapple
MLXXSC	Malus 'Snowcloud'	Snowcloud Crabapple
MLXXSD	Malus 'Snowdrift'	Snowdrift Crabapple
MLXXSP	Malus 'Sparkler'	Sparkler Crabapple
MLXXSS	Malus 'Spring Snow'	Spring Snow Crabapple
MLXXST	Malus 'Strathmore'	Strathmore Crabapple
MLXXSU	Malus 'Sundog'	Sundog Crabapple
MLXXTA	Malus 'Tanner'	Tanner Crabapple
MLXXTI	Malus 'Tina'	Tina Crabapple
MLXXTU	Malus 'Tursei'	Tursei Crabapple
MLXXVE	Malus 'Van Eseltine'	Van Eseltine Crabapple
MLXXVA	Malus 'Vanguard'	Vanguard Crabapple
MLXXWA	Malus 'White Angel'	White Angel Crabapple
MLXXWK	Malus 'White Candle'	White Candle Crabapple
MLXXWC	Malus 'White Cascade'	White Cascade Crabapple
MLXXWG	Malus 'Winter Gold'	Winter Gold Crabapple
MLAR	Malus arnoldiana	Arnold Crabapple
MLAT	Malus atrosanguinea	Carmine Crabapple
MLBA	Malus baccata	Siberian Crabapple
MLBACO	Malus baccata 'Columnaris'	Columnar Siberian Crabapple
MLBAJA	Malus baccata 'Jackii'	Jacky Crabapple
MLBR	Malus brevipes	Nippon Crabapple
MLCO	Malus coronaria	Wild Sweet Crabapple
MLCOCH	Malus coronaria 'Charlottae'	Charlotte Crabapple
MLCONE	Malus coronaria 'Neuwlandiana'	Neuwlandiana Crabapple
MLFL	Malus floribunda	Japanese Flowering Crabapple
MLHA	Malus halliana	Halliana Crabapple
MLHAPA	Malus halliana parkmanii	Parkman Crabapple
MLHU	Malus hupehensis (theifiera)	Tea Crabapple
MLIN	Malus inglis	Crabapple
MLIO	Malus ioensis	Prairie Crabapple
MLIOFI	Malus ioensis 'Fiore's Improved'	Fiore's Improved Crabapple
MLIOKB	Malus ioensis 'Klehm's Imp. Bechtel'	Klehm's Improved Bechtel Crab
MLIOPL	Malus ioensis 'Plena'	Bechtel Flowering Crabapple
MLIOPR	Malus ioensis 'Praire Rose'	Prairie Rose Crabapple
MLLE	Malus lemoinei	Lemoine Crabapple
MLMI	Malus micromalus	Crabapple
MLMO	Malus moerlandsii	Wintergold Crabapple
MLMOLI	Malus moerlandsii 'Liset'	Liset Crabapple
MLPE	Malus pendula	Weeping Crabapple
MLPU	Malus pumila	Common Apple
MLPUNI	Malus pumila 'Niedzwetzkyana'	Red Vein Flowering Crabapple

Code	Latin Name	Common Name
MLPPLE	Malus purpurea 'Lemoine'	Lemonie Crabapple
MLRO	Malus robusta	Siberian Hybrid Crabapple
MLROER	Malus robusta 'Erecta'	Cherry Crabapple
MLROPE	Malus robusta persicifolia	Peachleaf Crabapple
MLSA	Malus sargentii	Sargent Crabapple
MLSARO	Malus sargentii 'Rosea'	Rose Sargent Crabapple
MLSC	Malus scheideckeri	Scheidecker Crabapple
MLSI	Malus sieboldii	Toringo Crabapple
MLSIFU	Malus sieboldii 'Fuji'	Fuji Crabapple
MLSIAE	Malus sieboldii arborescens	Tree Toringo Crabapple
MLSP	Malus spectabilis	Chinese Crabapple
MLSPRI	Malus spectabilis 'Riversii'	Rivers's Crabapple
MLTO	Malus toringoides	Cutleaf Crabapple
MLTOMA	Malus toringoides macrocarpa	Cutleaf Crabapple
MLYU	Malus yunnanensis	Crabapple
MLZU	Malus zumi	Zumi Crabapple
MLZUCA	Malus zumi calocarpa	Redbud Crabapple
MYBP	Maytenus boaria	Chile Mayten Tree
MALE	Melaleuca leucadendra	Cajeput Tree
MEAZ	Melis azedarch	Chinaberry
MTGL	Metasequoia glyptostroboides	Dawn-redwood
MDTO	Metrosideros tomentosa	New Zealand Christmas Tree
MOAL	Morus alba	White Mulberry
MOALCH	Morus alba 'Chaparral'	Chaparral Fruitless Mulberry
MOALKI	Morus alba 'Kingan'	Kingan Fruitless Mulberry
MOALML	Morus alba 'Maple Leaf'	Maple Leaf Mulberry
MOALPE	Morus alba 'Pendula'	Weeping Mulberry
MOALTW	Morus alba 'Tea's Weeping'	Tea's Weeping Mulberry
MONI	Morus nigra	Black Mulberry
MOPL	Morus platanifolia	Planeleaf Mulberry
MORU	Morus rubra	Red Mulberry
MUEN	Musa ensete	Abyssinian Banana
NYSI	Nyssa sinensis	Chinese Sour Gum
NYSY	Nyssa sylvatica	Black Tupelo or Black Gum
OLEU	Olea europaea	Common Olive
OSVI	Ostrya virginiana	Eastern or American Hornbeam
OXAR	Oxydendrum arboreum	Sourwood
PAPE	Parrotia persica	Persian Persica
PWTO	Paulownia tomentosa	Empress Tree
PDAM	Phellodendron amurense	Amur Cork Tree
PDCH	Phellodendron chinense	Chinese Cork Tree
PHRE	Phoenix reclinata	Sengal Date Palm
PI	Picea sp.	Spruce
PIAB	Picea abies (excelsa)	Norway Spruce
PIAS	Picea asperata	Dragon Spruce
PIBR	Picea breweriana	Brewer Spruce
PIEN	Picea engelmannii	Englemann Spruce
PIGL	Picea glauca	White Spruce
PIGLDE	Picea glauca densata	Black Hills Spruce
PIKO	Picea koyamai	Koyama Spruce
PIMA	Picea mariana	Black Spruce
PIMADO	Picea mariana 'Doumetii'	Doumet Black Spruce
PIOM	Picea omorika	Serbian Spruce
PIOR	Picea orientalis	Oriental Spruce
PIPU	Picea pungens	Colorado Blue Spruce
PIPUHO	Picea pungens 'Hoopsii'	Colorado Blue Spruce
PIPUKO	Picea pungens kosteri	Koster Blue Spruce
PIPUMO	Picea pungens moerheimi	Moerheim Spruce
PIRU	Picea rubens	Red Spruce
PISI	Picea sitchensis	Sitka Spruce
PISM	Picea smithiana	Himalayan Spruce
PIWI	Picea wilsonii	Wilson Spruce
PN	Pinus sp.	Pine
PNAR	Pinus aristata	Bristlecone Pine
PNBA	Pinus banksiana	Jack Pine
PNBU	Pinus bungeana	Lacebark Pine
PNCN	Pinus canariensis	Canary Pine
PNCE	Pinus cembra	Swiss Stone Pine
PNCO	Pinus contorta	Shore Pine
PNCOLA	Pinus contorta latifolia	Lodgepole Pine
PNDE	Pinus densiflora	Japanese Red Pine
PNDEUM	Pinus densiflora 'Umbraculifera'	Tanyosho Pine
PNDEPE	Pinus densiflora pendula	Weeping Red Pine
PNFL	Pinus flexilis	Limber Pine
PNGR	Pinus griffithii (wallichiana)	Himalayan White Pine

Code	Latin Name	Common Name
PNHA	Pinus halepensis	Aleppo Pine
PNJE	Pinus jeffreyi	Jeffrey Pine
PNKO	Pinus koraiensis	Korean Pine
PNLA	Pinus lambertiana	Sugar Pine
PNMO	Pinus monticola	Western White Pine
PNMU	Pinus mugo	Swiss Mountain or Mugo Pine
PNNI	Pinus nigra	Austrian Pine
PNNIPE	Pinus nigra pendula	Weeping Austrian Pine
PNPA	Pinus parviflora	Japanese White Pine
PNPE	Pinus peuce	Balkan Pine
PNPN	Pinus pinaster	Cluster Pine
PNPI	Pinus pinea	Italian Stone Pine
PNPO	Pinus ponderosa	Ponderosa Pine
PNRA	Pinus radiata	Monterey Pine
PNRE	Pinus resinosa	Red Pine
PNRI	Pinus rigida	Pitch Pine
PNSF	Pinus strobiformis	Southwestern White Pine
PNST	Pinus strobus	Eastern White Pine
PNSTFA	Pinus strobus fastigiata	Columnar White Pine
PNSTPE	Pinus strobus pendula	Weeping White Pine
PNSY	Pinus sylvestris	Scotch Pine
PNSYGN	Pinus sylvestris 'Glauca Nana'	Scotch Pine
PNSYFA	Pinus sylvestris fastigiata	Columnar Scotch Pine
PNTH	Pinus thunbergii	Japanese Black Pine
PNTO	Pinus torreyana	Torrey Pine
PNVI	Pinus virginiana	Virginia Pine
PTRH	Pittosporum rhombifolium	Diamond Leaf Pittosporum
PLAC	Platanus acerifolia	London or European Planetree
PLACBG	Platanus acerifolia 'Bloodgood'	Bloodgood Planetree
PLOC	Platanus occidentalis	American Sycamore, Buttonwood
PLOR	Platanus orientalis	Oriental Planetree
PLRA	Platanus racemosa	California or Arizona Sycamore
POTR	Poncirus trifoliata	Hardy-orange
PP	Populus sp.	Poplar
PPXX	Populus (hybrids)	Hybrid Poplar
PPAL	Populus alba	White Poplar
PPALBO	Populus alba 'Bolleana' (Pyramidalis)	Bolleana Poplar
PPBE	Populus berolinensis	Berlin Poplar
PPCAEU	Populus canadensis eugenei	Carolina Poplar
PPCD	Populus candicans	Ontario Poplar
PPDE	Populus deltoides	Eastern Cottonwood
PPFR	Populus fremontii	Fremont Poplar
PPLA	Populus lasiocarpa	Chinese Poplar
PPMA	Populus maximowiczii	Japanese Poplar
PPNIIT	Populus nigra 'Italica'	Lombardy Poplar
PPSI	Populus simonii	Simon Poplar
PPTE	Populus tremuloides	Quaking Aspen
PPTI	Populus trichocarpa	Black Cottonwood
PR	Prunus sp.	Cherry, Plum, or Peach
PRXXCS	Prunus 'Cistena'	Purple Sand Cherry
PRXXHJ	Prunus 'Hally Jolivette'	Hally Jolivette Flowering Cherry
PRAM	Prunus americana	American Plum
PRAY	Prunus amygdalus	Almond
PRAR	Prunus armeniaca	Apricot
PRAV	Prunus avium	Mazzard Cherry
PRBL	Prunus blireana	Purple Plum
PRCA	Prunus campanulata	Formosan Cherry
PRCATW	Prunus campanulata 'Taiwan'	Taiwan Cherry
PRCR	Prunus caroliniana	Carolina Cherry Laurel
PRCE	Prunus cerasifera	Cherry Plum
PRCEAT	Prunus cerasifera 'Atropurpurea'	Pissard Plum
PRCEHW	Prunus cerasifera 'Hollywood'	Hollywood Plum
PRCENP	Prunus cerasifera 'Newport'	Newport Plum
PRCETC	Prunus cerasifera 'Thundercloud'	Thundercloud Purple Plum
PRCEVK	Prunus cerasifera 'Vesuvius Krauter'	Vesuvius Krauter Plum
PRCS	Prunus cerasus	Sour Cherry
PRHISP	Prunus hillieri 'Spire'	Hillier Spire Cherry
PRHO	Prunus hortulana	Houtulan Plum
PRLU	Prunus lusitanica	Portugal Laurel
PRLY	Prunus lyonii	Catalina Cherry
PRMA	Prunus maackii	Amur or Manchurian Cherry
PRMT	Prunus maritima	Beech Plum
PRMX	Prunus maximowiczii	Miyama Cherry
PRMU	Prunus mume	Japanese Apricot
PRMUPC	Prunus mume 'Peggy Clarke'	Peggy Clarke Japanese Apricot

Code	Latin Name	Common Name
PRMURC	Prunus mume 'Rosemary Clarke'	Rosemary Clarke Japanese Apricot
PRNI	Prunus nipponica	Nipponese Cherry
PRPA	Prunus padus	European Birdcherry
PRPALA	Prunus padus 'Alvertii'	Albert Birdcherry
PRPAGR	Prunus padus grandiflora	Big Flowered Birdcherry
PRPN	Prunus pennsylvanica	Pin Cherry
PRPR	Prunus persica	Common Peach
PRSA	Prunus sargentii	Sargent Flowering Cherry
PRSARA	Prunus sargentii 'Rancho'	Rancho Sargent Cherry
PRSACO	Prunus sargentii columnare	Columnar Sargent Cherry
PRSR	Prunus serotina	Black Cherry
PRSL	Prunus serrula	Paperbark Cherry
PRSE	Prunus serrulata	Japanese Flowering Cherry
PRSEAM	Prunus serrulata 'Amanogawa'	Amanogawa Japanese Cherry
PRSEDA	Prunus serrulata 'Daikoku'	Daikoku Japanese Cherry
PRSEKW	Prunus serrulata 'Kwanzan' (sekiyama)	Kwanzan Flowering Cherry
PRSENA	Prunus serrulata 'Naden'	Naden Japanese Cherry
PRSEOJ	Prunus serrulata 'Ojochin'	Ojochin Japanese Cherry
PRSEPE	Prunus serrulata 'Pendula'	Weeping Japanese Cherry
PRSESF	Prunus serrulata 'Shirofugen'	Shirofugen Cherry
PRSESH	Prunus serrulata 'Shirotae'	Mount Fuji Japanese Cherry
PRSESG	Prunus serrulata 'Shogetsu'	Shogetsu Japanese Cherry
PRSETH	Prunus serrulata 'Tai Haku'	Great White Cherry
PRSEUK	Prunus serrulata 'Ukon'	Ukon Japanese Cherry
PRSU	Prunus subhirtella	Higan Cherry
PRSUAU	Prunus subhirtella autumnalis	Autumn Higan Cherry
PRSUPE	Prunus subhirtella pendula	Weeping Higan Cherry
PRTO	Prunus tomentosa	Manchu Cherry
PRTR	Prunus triloba	Flowering Plum
PRVI	Prunus virginiana	Common Chokecherry
PRVISH	Prunus virginiana 'Shubert'	Shubert Canadian Red Cherry
PRYE	Prunus yedoensis	Yoshino Cherry
PRYEAK	Prunus yedoensis 'Akebono'	Akebono Cherry
PEKF	Pseudolarix kaempferi (amabilis)	Golden-larch
PSME	Pseudotsuga menziesii (taxifolia)	Douglas-fir
PCFR	Pterocarya fraxinifolia	Caucasian Wingnut
PXHI	Pterostyrax hispidus	Fragrant Epaulettetree
PYCA	Pyrus calleryana	Callery Pear
PYCAAR	Pyrus calleryana 'Aristocrat'	Aristocrat Callery Pear
PYCABF	Pyrus calleryana 'Bradford'	Bradford Callery Pear
PYCABH	Pyrus calleryana 'Broadhead'	Broadhead Callery Pear
PYCACC	Pyrus calleryana 'Chanticleer'	Chanticleer Pear
PYCAFA	Pyrus calleryana 'Fauriei'	Fauriei Callery Pear
PYCARA	Pyrus calleryana 'Rancho'	Rancho Callery Pear
PYCARS	Pyrus calleryana 'Redspire'	Redspire Pear
PYCATR	Pyrus calleryana 'Trinity'	Trinity Callery Pear
PYUS	Pyrus ussuriensis	Ussurian Pear
QU	Quercus sp.	Oak
QUAC	Quercus acutissima	Sawtooth Oak
QUAG	Quercus agrifolia	California Live Oak
QUAL	Quercus alba	White Oak
QUAZ	Quercus arizonica	Arizona Oak
QUBI	Quercus bicolor	Swamp White Oak
QUCE	Quercus cerris	Turkey Oak (Asia)
QUCH	Quercus chrysolepis	Golden Cup Oak
QUCO	Quercus coccinea	Scarlet Oak
QUKO	Quercus douglassii	Blue Oak
QUEL	Quercus ellipsidalis	Northern Pin Oak
QUEM	Quercus emoryi	Emory Oak
QUEN	Quercus engleriana	Engler's Oak
QUFA	Quercus falcata	Spanish or Southern Red Oak
QUGA	Quercus garryana	Oregon White Oak
QUGL	Quercus glandulifera	Glandbearing Oak
QUIL	Quercus ilex	Holly Oak
QUIM	Quercus imbricaria	Shingle Oak
QUKE	Quercus kelloggii	California Black Oak
QULV	Quercus laevis	Turkey Oak (America)
QULA	Quercus laurifolia	Laurel Oak
QULI	Quercus libani	Lebanon Oak
QULO	Quercus lobata	California White Oak
QULY	Quercus lyrata	Overcup Oak
QUMA	Quercus macrocarpa	Bur Oak
QUML	Quercus marilandica	Blackjack Oak
QUMI	Quercus michauxii	Swamp Chestnut Oak
QUMU	Quercus muehlenbergii	Chinkapin Oak

Code	Latin Name	Common Name
QUNI	Quercus nigra	Water Oak
QUPA	Quercus palustris	Pin Oak
QUPACR	Quercus palustris 'Crownright'	Crownright Pin Oak
QUPASO	Quercus palustris 'Sovereign'	Sovereign Pin Oak
QUPH	Quercus phellos	Willow Oak
QUPR	Quercus prinus	Chestnut Oak
QURO	Quercus robur	English Oak
QUROFA	Quercus robur fastigata	Pyramidal English Oak
QURU	Quercus rubra (borealis)	Northern Red Oak
QUSH	Quercus shumardii	Shumard Oak
QUST	Quercus stellata	Post Oak
QUSU	Quercus suber	Cork Oak
QUVA	Quercus variabilis	Oriental Oak
QUVE	Quercus velutina	Black Oak
QUVI	Quercus virginiana	Live Oak
RH	Rhus sp.	Sumac
RO	Robinia sp.	Locust
ROXXID	Robinia 'Idaho'	Idaho Locust
RODE	Robinia decaisenana	Pink Locust
ROHI	Robinia hispida	Rose Acacia
RONE	Robinia neomexicana	New Mexican Locust
ROPS	Robinia pseudoacacia	Black Locust
ROPSIN	Robinia pseudoacacia 'Inermis'	Globe Locust
ROPSCO	Robinia pseudoacacia columnar	Columnar Black Locust
ROTO	Robinia tortusa	Locust
ROUM	Robinia umbraculifera	Locust
RYRE	Roystonea regia	Royal Palm
SLPA	Sabal palmetto	Palmetto
SA	Salix sp.	Willow
SAAL	Salix alba	White Willow
SAALVI	Salix alba vitellina	Golden Bark Weeping Willow
SABA	Salix babylonica	Weeping Willow
SABATR	Salix babylonica aurea 'Tristis'	Willow
SABL	Salix blanda (niobe)	Niobe Weeping Willow
SABLWI	Salix blanda 'Wisconsin'	Willow
SACA	Salix caprea	Goat Willow
SAEA	Salix elaeagnus	Elaeagnus Willow
SAEL	Salix elegantissima	Thurlow Weeping Willow
SAMATO	Salix matsudana tortuosa	Corkscrew Willow
SAMAAU	Salix matsudana tortuosa aurea	Golden Corkscrew Willow
SAPE	Salix pentandra	Laurel Willow
SAUMNG	Salix umbraculifera 'Navajo Globe'	Navajo Globe Willow
SMCO	Sambucus coerulea	Blueberry Elder
SSAL	Sassafras albidum	Common Sassafras
SNMO	Schinus molle	California Pepper Tree
SNTE	Schinus terebinthifolius	Brazil Pepper Tree
SCBE	Sciadopitys verticillata	Umbrella Pine
SQGI	Sequoia gigantea	Giant Sequoia
SQSEAB	Sequoia sempervirens 'Aptos Blue'	Aptos Blue Redwood
SQSESC	Sequoia sempervirens 'Santa Cruz'	Santa Cruz Redwood
SPJA	Sophora japonica	Japanese Pagoda Tree
SPJARE	Sophora japonica 'Regent'	Regent Scholartree
SPTE	Sophora tetraptera	New Zealand Sophora
SBXX	Sorbus (hybrids)	Hybrid Mountain-ash
SB	Sorbus sp.	Mountain-ash
SBAL	Sorbus alnifolia	Korean Mountain-ash
SBAM	Sorbus americana	American Mountain-ash
SBAR	Sorbus aria	White Beam Mountain-ash
SBAU	Sorbus aucuparia	European Mountain-ash
SBAUCR	Sorbus aucuparia 'Cardinal Royal'	Cardinal Royal European Mt.-ash
SBAUCC	Sorbus aucuparia 'Cole's Columnar'	Columnar European Mountian-ash
SBAUCQ	Sorbus aucuparia 'Columbia Queen'	Columbia Queen Mountain-ash
SBAUWI	Sorbus aucuparia 'Wilson'	Wilson Column Mountain-ash
SBAURO	Sorbus aucuparia rossica	Russian Mountain-ash
SBCA	Sorbus cashmiriana	Kashmir Mountain-ash
SBDE	Sorbus decora	Showy Mountain-ash
SBDI	Sorbus discolor	Snowberry Mountain-ash
SBFO	Sorbus folgneri	Folgner Mountain-ash
SBSA	Sorbus sargentiana	Sargent Mountain-ash
SBTHFA	Sorbus thuringiaca fastigiata	Oakleaf Mountain-ash
SBTI	Sorbus tianshanica	
SBVI	Sorbus vilmorinii	Vilmorin Mountain-ash
STKO	Stewartia koreana	Korean Stewartia
STPS	Stewartia pseudocamellia	Japanese Stewartia
SXJA	Styrax japonica	Japanese Snowbell

Code	Latin Name	Common Name
SXOB	Styrax obassia	Fragrant Snowbell
SY	Syringa sp.	Lilac
SYAM	Syringa amurensis	Amur Lilac
SYAMJA	Syringa amurensis japonica	Japanese Tree Lilac
TA	Taxodium sp.	Cypress
TAAS	Taxodium ascendens	Pondcypress
TADI	Taxodium distichum	Bald Cypress
TADISB	Taxodium distichum 'Shawnee Brave'	Shawnee Brave Bald Cypress
TX	Taxus sp.	Yew
TXBA	Taxus baccata	English Yew
TXCU	Taxus cuspidata	Japanese Yew
TXME	Taxus media	Intermediate Yew
TH	Thuja spp.	Arborvitae
THOC	Thuja occidentalis	Northern White Cedar
THOCNI	Thuja occidentalis 'Nigra'	Dark American Arborvitae
THOCTE	Thuja occidentalis 'Teacheyi'	Teachey's Pyramidal Arborvitae
THOCPY	Thuja occidentalis pyramidalis	Pyramidal Arborvitae
THOR	Thuja orientalis	Oriental Arborvitae
THPL	Thuja plicata	Giant Arborvitae
THST	Thuja standishii	Japanese Arborvitae
TI	Tilia sp.	Linden
TIAM	Tilia americana	American Linden or Basswood
TIAMRE	Tilia americana 'Redmond'	Redmond Linden
TIAMFA	Tilia americana fastigiata	Pyramidal American Linden
TICO	Tilia cordata	Littleleaf Linden
TICOBI	Tilia cordata 'Bicentenial'	Bicentenial Linden
TICOCH	Tilia cordata 'Chancellor'	Chancellor Littleleaf Linden
TICOFV	Tilia cordata 'Fairview'	Fairview Littleleaf Linden
TICOGL	Tilia cordata 'Glenleven'	Glenleven Linden
TICOGS	Tilia cordata 'Greenspire'	Greenspire Linden
TICOJB	Tilia cordata 'June Bride'	June Bride Littleleaf Linden
TICOOL	Tilia cordata 'Olympic'	Olympic Littleleaf Linden
TICORA	Tilia cordata 'Rancho'	Rancho Linden
TICOSA	Tilia cordata 'Salem'	Salem Littleleaf Linden
TICOER	Tilia cordata erecta	Erect Littleleaf Linden
TIEC	Tilia euchlora	Crimean Linden
TIER	Tilia europaea	European Linden, Common Lime
TIHE	Tilia heterophylla	White Basswood
TIMO	Tilia mongolica	Mongolian Linden
TIPE	Tilia petiolaris	Pendant Silver Linden
TIPL	Tilia platyphyllos	Bigleaf Linden
TIPLRU	Tilia platyphyllos rubra	Red Twigged Largeleaf Linden
TITO	Tilia tomentosa	Silver Linden
TITOBB	Tilia tomentosa 'Brabrant'	Brabrant Silver Linden
TSCN	Tsuga canadensis	Eastern or Canadian Hemlock
TSCR	Tsuga caroliniana	Carolina Hemlock
TSDI	Tsuga diversifolia	Japanese Hemlock
TSHE	Tsuga heterophylla	Western Hemlock
TSME	Tsuga mertensiana	Mountain Hemlock
UL	Ulmus sp.	Elm
ULAL	Ulmus alata	Winged Elm
ULAM	Ulmus americana	American Elm
ULAMAU	Ulmus americana 'Augustine'	Augustine Ascending Elm
ULAMDF	Ulmus americana 'Deadfree'	Deadfree Elm
ULCA	Ulmus carpinifolia	Smoothleaf Elm
ULCACB	Ulmus carpinifolia 'Christine Buisman'	Christine Buisman Elm
ULGL	Ulmus glabra	Scotch or Wych Elm
ULGLCA	Ulmus glabra camperdownii	Camperdown Elm
ULPA	Ulmus parvifolia	Chinese Elm
ULPADR	Ulmus parvifolia 'Drake'	Drake Elm
ULPATG	Ulmus parvifolia 'True Green'	True Green Chinese Elm
ULPAWE	Ulmus parvifolia 'Weeping'	Weeping Chinese Elm
ULPR	Ulmus procera	English Elm
ULPU	Ulmus pumila	Siberian Elm
ULRU	Ulmus rubra	Slippery or Red Elm
ULTH	Ulmus thomasii	Rock Elm
ULHOBS	Ulmus x hollandica 'Bea Schwartz'	Bea Schwartz Hybrid Elm
ULHOCO	Ulmus x hollandica 'Commelin'	Commelin Hybrid Elm
ULHOGR	Ulmus x hollandica 'Groeneveld'	Groeneveld Hybrid Elm
UMCA	Umbellularia californica	California Laurel
ZE	Zelkova sp.	Zelkova
ZESE	Zelkova serrata	Sawleaf or Japanese Zelkova
ZESEPV	Zelkova serrata 'Parkview'	Parkview Zelkova
ZESEVG	Zelkova serrata 'Village Green'	Village Green Zelkova

APPENDIX 50.

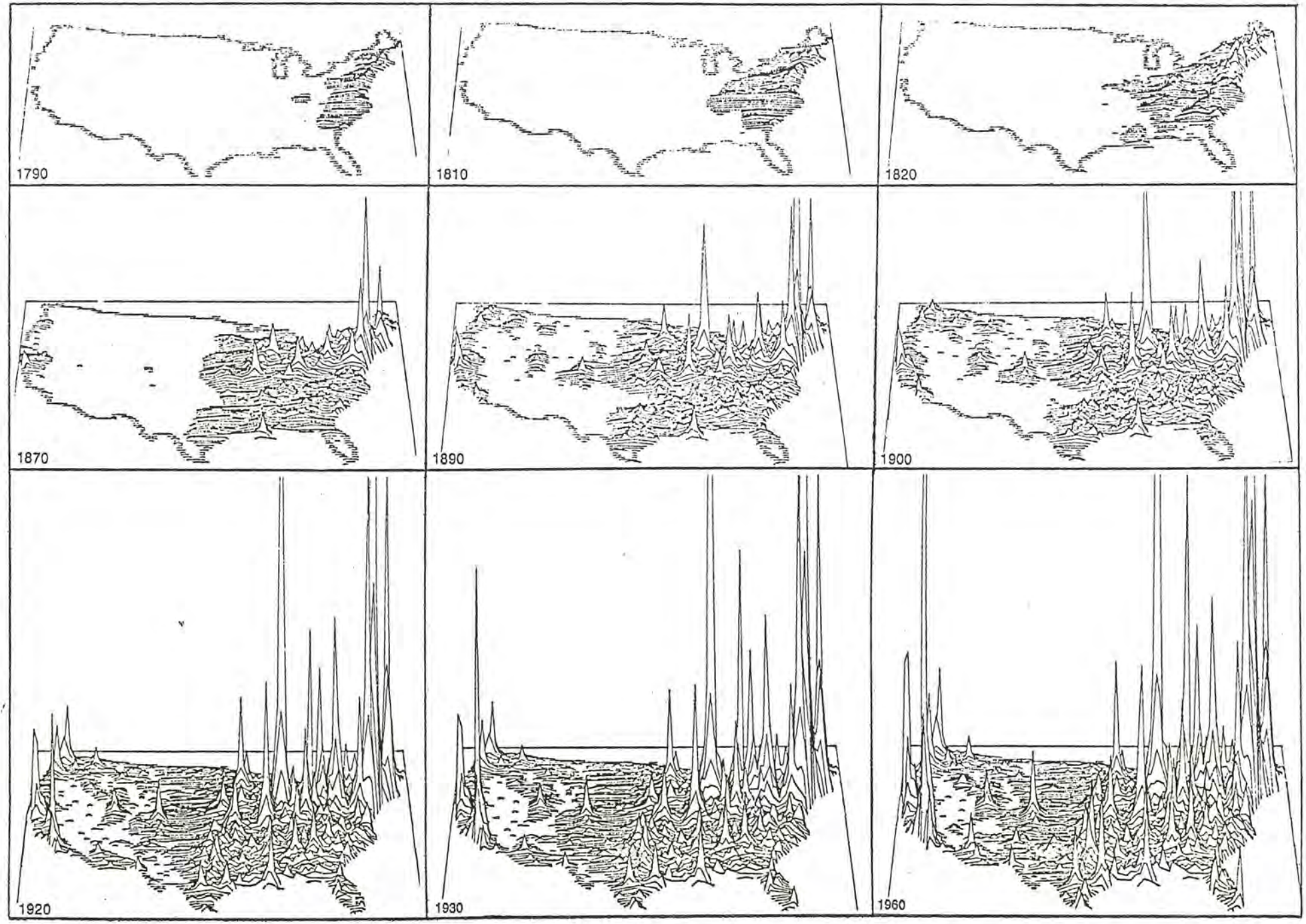
Example of the use of currently
available Three-Dimensional Graphics

Laboratory for Computer Graphics and Spatial Analysis
Graduate School of Design Harvard University

LAB-LOG

520 Gund Hall 48 Quincy Street Cambridge, Mass. 02138 Tel: (617) 495-2526 January 1977

Selected Maps of U.S. Population Density from "Manifested Destiny"



DR. RICHARD E. BECKER, R.P.F.

ECOLOGIST
B.C. HYDRO
700 WEST PENDER STREET
VANCOUVER, B.C. V6C 2S5

663-2040

R. E. Becker -

comarc design systems

The Agriculture Building
Embarcadero at Mission
San Francisco, California 94105
415-392-5268

City of Aspen/Pitkin County Planning Information System
Comarc has been retained by this well known Colorado City and County to design a planning information system for the entire County and to implement a data base for the Aspen-Snowmass region. One of the initial products of this data base was a topographic perspective also showing surficial geology.

This colorful perspective map proved an effective way to demonstrate to the public some of the hazards to development and encourage proper development patterns. The perspective shown below is without geology.

Fresno Council of Governments Planning Information System Fresno, California
Comarc has recently implemented an entire data information system for the Fresno Council of Governments. This system, although quite inexpensive, is able to utilize completely an existing data base which the Fresno COG had prepared earlier for all of Fresno County. Although this data base had been placed on a computer situated in another part of California, Comarc's new system allows the COG to utilize it by means of a remote terminal located in Fresno.

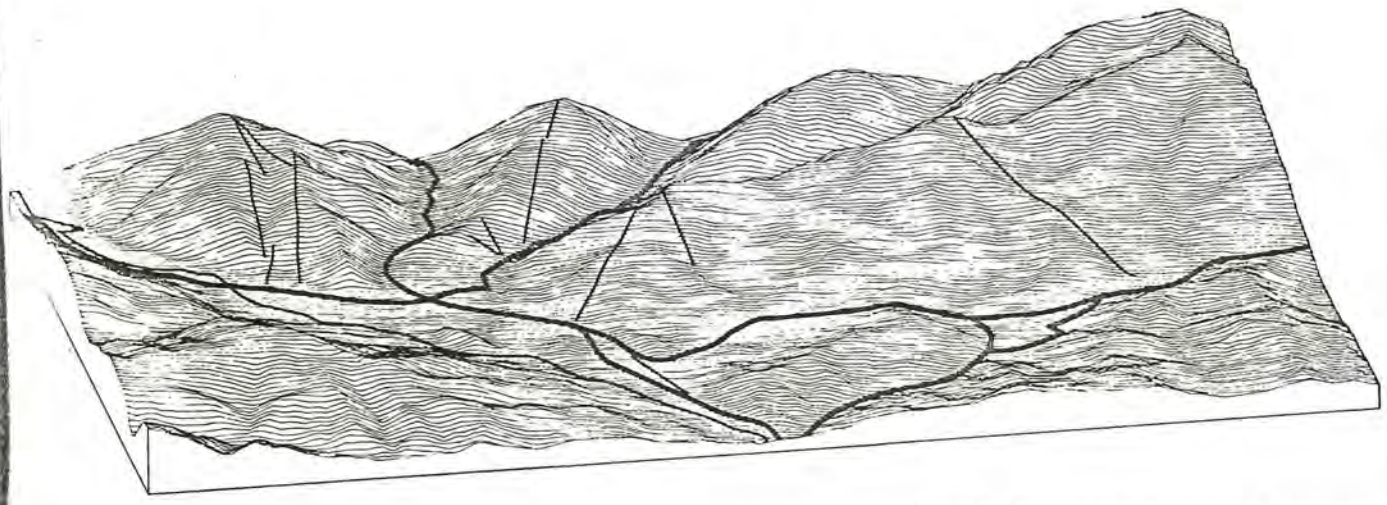
The COG's system, as designed by Comarc, is capable of multiple and rapid overlay mapping, quick interpretation of existing data to provide new, reliable information, and participatory analysis with COG staff and citizens' groups to isolate and map development and conservation preferences. The system can also be effectively used to prepare linear profiles of proposed transportation routes and other public service corridors, by which impacts of and upon these corridors can be ascertained far in advance of their detailed planning and construction.

This system was designed to insure that COG staff members with little or no training in computers could readily and successfully utilize it. For less than the cost of preparation of a small Environmental Impact Report, the COG was provided with a planning information system which vastly simplifies general plan updates, impact analysis, and transportation studies.

City of Ventura Hillside Management Program
This scenic California coastal city adopted as part of their Open Space and Conservation Element the objective to "develop a hillside ordinance which relates the number and distribution of dwelling units to the topographical, geological and hydrological conditions of the hillside, so that the terrain will retain its natural and scenic character and the danger to life and property by the hazards of fire, flood, water pollution, soil erosion and land slippage will be minimized."

Comarc has been selected to complete the first phase of this project which will be to determine physical constraints and holding capacities. In doing this, a data base including information on topography, soils, geology, and hydrology is being constructed. Through modeling, slope stability and erosion hazard maps are being produced.

Then a group of agency and private geologists and hydrologists are being brought together to establish the criteria for determining holding capacities. These sessions will utilize Comarc's modified delphi technique to insure that a consistent, thorough and defendible set of criteria will result. The final holding capacity map will then be plotted in perspective.



Aspen/Snowmass area topographic perspective

Polygon Overlays
One of the most unique and important aspects of Comarc's system is its ability to work with data in its natural or polygon form. The actual boundries of the data are digitized and stored in the same form that they exist on the original map or photograph. This unique ability to encode the actual data boundery without first reducing it to grids or straight line segments, insures that no data resolution is lost in putting information in the computer.

Once the data has been stored, it can automatically be transfigured to any size grid for more efficient processing, or it can be worked with in its natural form. The example below demonstrates the systems ability to do polygon overlay's.

In this example the Town of Moraga wished to use census data to produce maps showing population density and dwelling unit density. In that census data is provided on a block level, it is generally necessary to assume that the block is homogenous. In fact, however, all of the dwelling units could be concentrated in one small part of the block, thus creating a much higher density than the census data would seem to imply.

In order to make the density maps accurate, the Comarc system overlayed the census block map with the land use map to determine what part of each block was occupied by residential units.

This process is being demonstrated below using the actual maps which were plotted by the system. On the left is the plot of the towns census block map. In the center is the plot of the land use map which is shown here as it relates to census blocks. On the right is the result of the polygon overlay, showing the actual area of each block that is occupied by residential units. This, then is a true polygon overlay with no generalization or loss of resolution.

On the opposite page, the system has automatically applied the census data to the final map in order to produce two new maps; one showing dwelling unit density and the other showing population density.

This is just one example of how data can easily be made more relevant and useful once it is in the system.

Town of Moraga citizens participating in a Delphi session moderated by Comarc

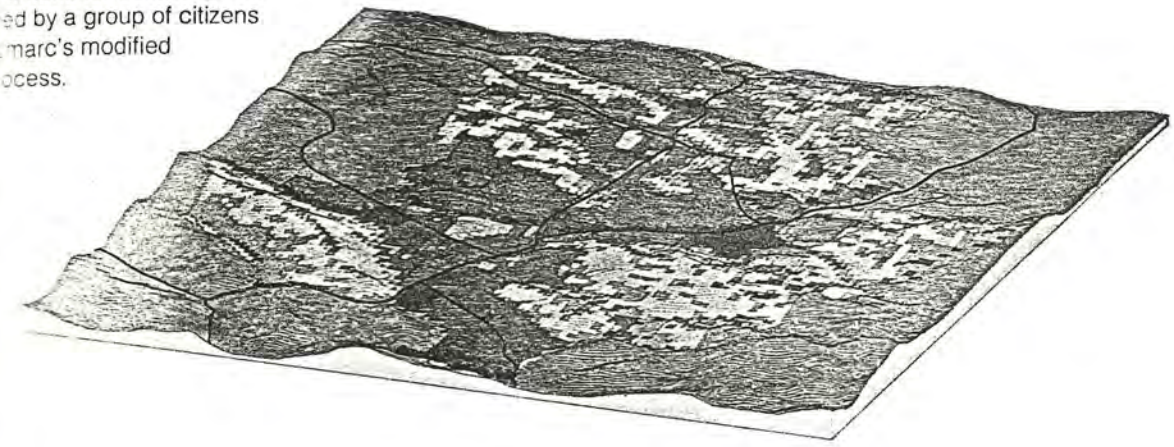
Census blocks

Land use

Resultant polygon overlay

Moraga General Plan Program
Shown in this persp
pment suitability c
eveloped sites wit
aga. The criteria fo
stablished by a gr
sing Comarc's m
elphi process.

raga General
rogram
n this perspective is the devel-
er's suitability of each of the un-
eloped sites within the town of Mor-
e criteria for suitability was
ed by a group of citizens
marc's modified
rocess.



density

Dwelling unit density

I any development situation there is ..ually a small spread between profit and loss. Loss, when it does occur, is f..quently the result of planning based c.. insufficient data, or of not anticipating a contingency which later arises. Consequently, it is imperative for a h..lthy project that the full range of p..'sical data relative to a site be available for analysis, and that this analysis be thorough and based on sound site d..elopment principles.

Comarc has been highly successful in p..viding cost-effective services for a v..ety of site development situations. During the preliminary planning stages of a project, Comarc is able to encode t..ography and produce maps showing p..centage of slope, natural drainage patterns, and visual exposure. In the event that other factors such as soils, g..logy, and location of infrastructure w.. affect the project plan, they are also encoded and a map prepared showing w..ch areas can be developed with the l..t cost and the least environmental impact.

O..e a site plan has been produced, it is ..gitized and cut/fill quantities calculated. Because this method of computing quantities is so fast and economical, it possible for the planner or engineer t.. look at more grading alternatives and make adjustments to assure a balance.

An..her advantage of using the Comarc system to compute cut/fill is that the computer can then use the same files to pr..uce other displays. For example, a ..r disturbance map can be plotted showing depths of cut or fill; a distribution map can be plotted showing cut ar.. s and yards, and fill area and yards. Th.. map is especially useful in computing haul quantities. The system can ..lso produce drainage maps showing ..o the project plan alters the natural dra..age patterns, as well as cross sections, and perspectives showing the sit.. before and after grading from any ob..rvation point. The Comarc system is even able to plot proposed roads and buildings on the perspective to show the ..nd result of the project.

Russian Embassy
Washington, D.C.
Comarc analyzed and computed cut and fill earthwork quantities for the new Russian Embassy near Washington, D.C., under an overall contract with the U.S. Department of State. In addition, Comarc plotted the project site's property lines using metes and bounds, and computed and plotted a contour map of the regraded site.

San Diego, California,
Land Fill Study
San Diego County Comprehensive Planning Organization
San Diego County, faced with the need to expand current sanitary land fill capability, engaged Comarc to analyze site factors relating to a proposed new facility. The firm began by digitizing the topography of the area as well as the new facility's proposed grading plan. From this and similar information, Comarc computed earthwork quantities and produced a cut and fill distribution map showing areas where soil would be removed and where it would be placed. As well, Comarc prepared perspectives illustrating the proposed site from various observation points, both before and after grading.

Mountain Village View Study
Alameda County, California
Comarc was retained to prepare a view study of the proposed Mountain Village development in the Oakland Hills near San Francisco Bay. From Comarc's view analysis, it was possible to ascertain the level and type of view impacts both upon and from the site.

Chieh Shov Sports Palace
Taiwan, Republic of China
Comarc analyzed and computed earthwork quantities for this large new sports stadium on Taiwan. Comarc was able to produce all data in metric measurements to conform to the standards of the Republic of China.

Crossroads Planning Project
Albany, New York
Comarc was retained to produce s.. information and maps and perspect.. for use in planning this commercial.. project in upstate New York.

San Bruno Mountain Studies
San Bruno, California
Comarc has been engaged in two.. separate studies on San Bruno Mou.. tain, located on the outskirts of San.. Francisco. The Mountain has been.. focus of heated debate in recent ye.. over conservation versus developm.. In one study, Comarc prepared view.. exposure maps of potential develop.. ments as well as three dimensional.. perspectives illustrating project sites.. from various locations. In a second.. study, Comarc used existing topographical information to generate slo.. maps illustrating where development could occur.

Scheduling of Engineering Projects
George S. Nolte and Associates
Over the past several years, Comarc has provided a critical path method.. scheduling service for the major engineering firm of George S. Nolte an.. Associates on several sizeable projects. This service has included San.. Francisco's Indian Basin Redevelopment Project, the City of Pinole, Califo.. nia, Redevelopment Project, and the.. Reno-Sparks, Nevada, Joint Waste Water and Sewer Project.

..rthwork Analysis
..Comarc syster..
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..Grading

..Grading

work Analysis

e Comarc system is used to do
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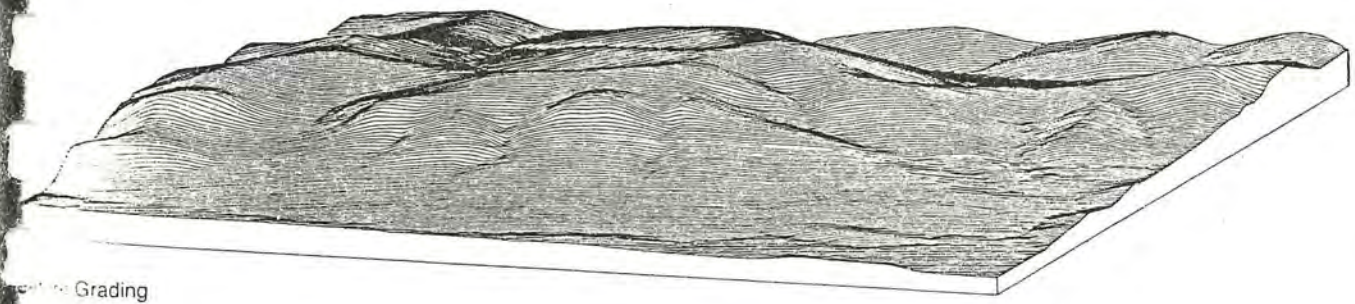
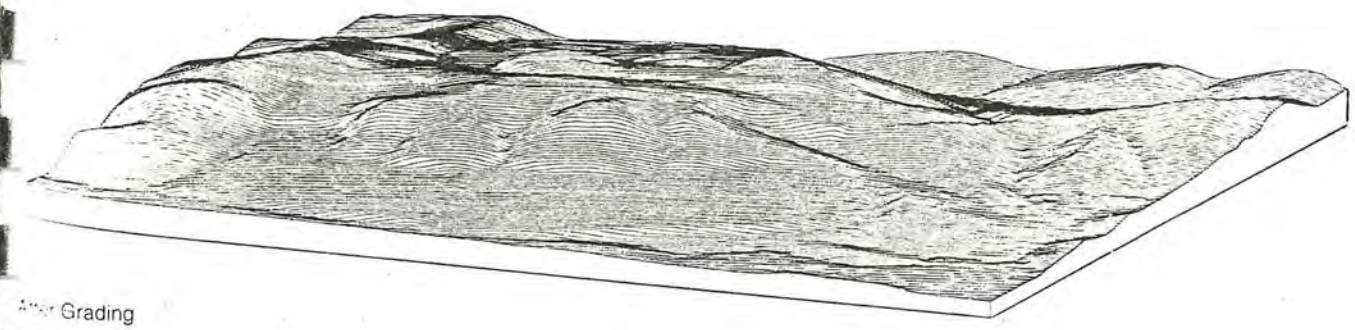
e same digitized files, the
can also produce several other
es and displays to assist both the
r and the engineer. Two ex-
es of these are shown on this

nd Disturbance Map on the right
depth of cut and fill. Intensities of
cate cut and blue depicts fill.

are *Perspectives* showing the
te before and after grading.
e can be plotted from any angle
can also include roads, buildings
ther features.



Grading



Grading

APPENDIX 51.

Example of Complaints about trees
by the General Public to Park Board

1339 E 63 Ave.,
Van. B.C. V5X 2L5
July 25, 1978.

5152

Vancouver Parks Board,
2099 Beach
Van. B.C.

REG 2062
REFER OB to reply
JUL 31 1978
RELEASED
FILING BY
DATE

Dear Sirs,

The boulevard trees on East 63 Ave are Japanese Cherry and are infested with an object that looks like an oyster. The infestation is causing the leaves to drop.

It would be appreciated if your staff would spray the trees, and I would also suggest that they should be sprayed every spring

Yours truly,

L. W. Simpson

FYBD. - Please check & Reply

FILE # 5152

CROSS REFERENCE FILE #

BOARD OF PARKS & RECREATION
PARKS
REG. NO. 6181
REFER TO
JAN 2 1 1976

RELEASED FROM FILING BY C. Mann
DATE FEB 10/77.

7709 Granville Street,
Vancouver, B.C.
V6P 4Y9

January 19, 1977.

Done Feb. 1 1977
WELL TRIMMED

The Parks Board Offices,
2099 Beach Avenue,
VANCOUVER, B.C.

Gentlemen:

I have two birch trees on my boulevard at 61st Avenue and Granville Street which are a source of trouble to me, besides being particularly ugly trees. I have requested many times, by letter and telephone, to have these trees (a) removed, (b) pruned, so that I could reach to spray them and keep them under control. All to no avail!

Each year I have the following to look forward to:

(a) spending a small fortune (to me!) on spray to control the aphids from these trees which are destroying my boxwood hedge, roses and shrubs.

(b) paying to have leaves cleaned from my north gutter (too high for me to reach), ($15.00).

(c) having the City Sewer Department clean roots from my sewer line ($23.00).

(d) repairing my power mower which hits the roots coming through the lawn (I am too old to use a hand mower!) ($12.00).

(e) hours spent each fall raking leaves and keeping the sidewalk clean for pedestrians.

(f) roots appearing in my dry-stone wall along 61st Avenue below my boxwood hedge.

The City taxes on my property seem to be increasing every year and I am finding these unnecessary expenses annoying, to say the least.

Would it, therefore, be in order for me to send you my yearly expenses in this connection since the City insists on leaving the two trees on the boulevard? I am quite prepared to replace the birch with two small, flowering trees which I can prune and spray myself.

Your comments would be appreciated.

Yours very truly,

J. Macpherson.

/jm

(Mrs.) June L. Macpherson.

5950 Alma St.,
Vancouver V6N 1Y4.
Oct. 23, 1977.

City Parks Board,
Boulevard Trees Dep't

Dear Sirs,

Fred H. to handle

Your department will have received many telephone calls concerning the diseased condition of the oak trees in the 5700, 5800, 5900 and 6000 block on Alma Street. The trees were sprayed last week in a token manner but the following conditions still exist:

1. Small green worms hang from webs - to the disgust of anyone walking on the sidewalk
2. Cocoons have fastened themselves to the bark of the trees which suggests next year will produce a new crop
3. The leaves are pinpointed with tiny holes and appear diseased

In addition to the above points

4. In the summer there is a sticky substance produced which damages car paint and keeps cars and pavements in a wretched condition
5. The trees on the west side of the street have been allowed to grow out of control
6. These oak trees are completely unsuitable boulevard trees and should be replaced with an ornamental flowering variety.

Yours truly,

Mrs. R.G. Leckie

BOARD OF PARKS
& RECREATION
REG. NO. 338
REFER TO
FEB 1 1977
RELEASED FOR
FILING BY
DATE

FILE # 5152
CROSS REFERENCE FILE #

4585 West 9th Avenue
Vancouver, B.C.
V6R 2E2

January 31st, 1977

Mr. Conrad Mam
Director
Operation & Maintenance Division
Vancouver Parks Board
2099 Beach Avenue
Vancouver, B.C.

Dear Sir:

My residence is in the 4500 block West 9th Avenue in Vancouver and I have lived here since 1945.

The boulevard trees, fronting my 66 foot lot, are mountain ash which are now of great age. Several in the block have died either of old age or disease.

It is my hope that the three trees fronting my property can be replaced with a flowering type, deciduous tree, preferably the red crab-apple variety, similar to those planted in the 3100 block West 24th Avenue.

There are two main reasons for desiring the replacement of the existing trees. The first is the berries. They create a real mess on the boulevard which we endeavour to assiduously maintain during the growing season, and on the cars parked on the street. The residue they leave on the latter is particularly difficult to remove and, because of its acid content, frequently causes damage to the paint. The berries also stick to the soles of shoes and are thus tracked into the house to inflict stains on carpets and floors.

The second reason is that many starlings are attracted to the trees. During the past few years literally hundreds of these birds frequent the trees during October to feed on the berries. Unfortunately they feed only on those left on the trees and do not eat the ones that lie all over the boulevard.

CENTRAL REGISTRY
BOARD OF PARKS AND RECREATION

CENTRAL REGISTRY

When all the berries on the trees are finished, the starlings then demolish most of the fruit on my apple tree, located near the front of my garden. The result is that most of the apples must now be picked green to survive the onslaught of the birds.

I would be willing to pay for the planting of the suggested flowering type of tree provided the City cuts down the three trees now fronting my property.

Your consideration and approval of my request would be greatly appreciated.

Yours truly,

F.H. Stevens

APPENDIX 52.

Example of Publications by other Cities outlining their Boulevard Tree Programs

CARE

, HERBACEOUS &
LLANEOUS PLANTS

GARDEN DESIGN

How to keep your garden clean and attractive.

The gardeners' 'fight' against weeds is undoubtedly a tedious and seemingly never ending task. However, with the aid of certain chemicals some of the pains of this job can be eradicated.
Weedkillers have various characteristics; for instance, PARAQUAT will kill all green-leaved material it comes into contact with, but renders itself inert once it touches the soil; and SIMAZINE will control weeds over an extensive period, being 'residual' and remaining active in the soil for approximately three months, killing practically all weeds in a short period for germination; and SODIUM CHLORATE killing all plant material above and below ground level. With Sodium Chlorate, the area treated should not be planted for at least six months, as traces of the chemical will still remain in the soil. Great care must be taken as this chemical will spread through the soil and destroy plant material in the immediate vicinity.
If weedkillers are to be used, the instructions MUST be followed. It is advisable to keep a separate watering can specifically for weedkiller which should be cleaned thoroughly after use and if any container is to be used to hold weedkiller it must be labelled clearly and placed well out of reach from children.

Special Plant List

Rock Garden Astilbe amplicifolia, Armeria, Dianthus deltoides, Gentiana 'Inverleith', Phlox Douglasii, Potentilla fruticosa, Asian Primula, Salix wehrhahnii, Saxifraga sp, Sedum sp; Thymus serpyllum, Veronica gentianoides.

Ground Cover Cotoneaster horizontalis, Erica vars, Euonymous radicans, Hypericum calycinum, Juniperus prostrata vars, Ajuga, Bergenia, Hosta, Nepeta, Thymus.

Waterside Astilbe chinensis, Bergenia, Dicentra, Hosta undulata, Iris Kaempferi, Mimulus, Phalaris arundinacea picta.

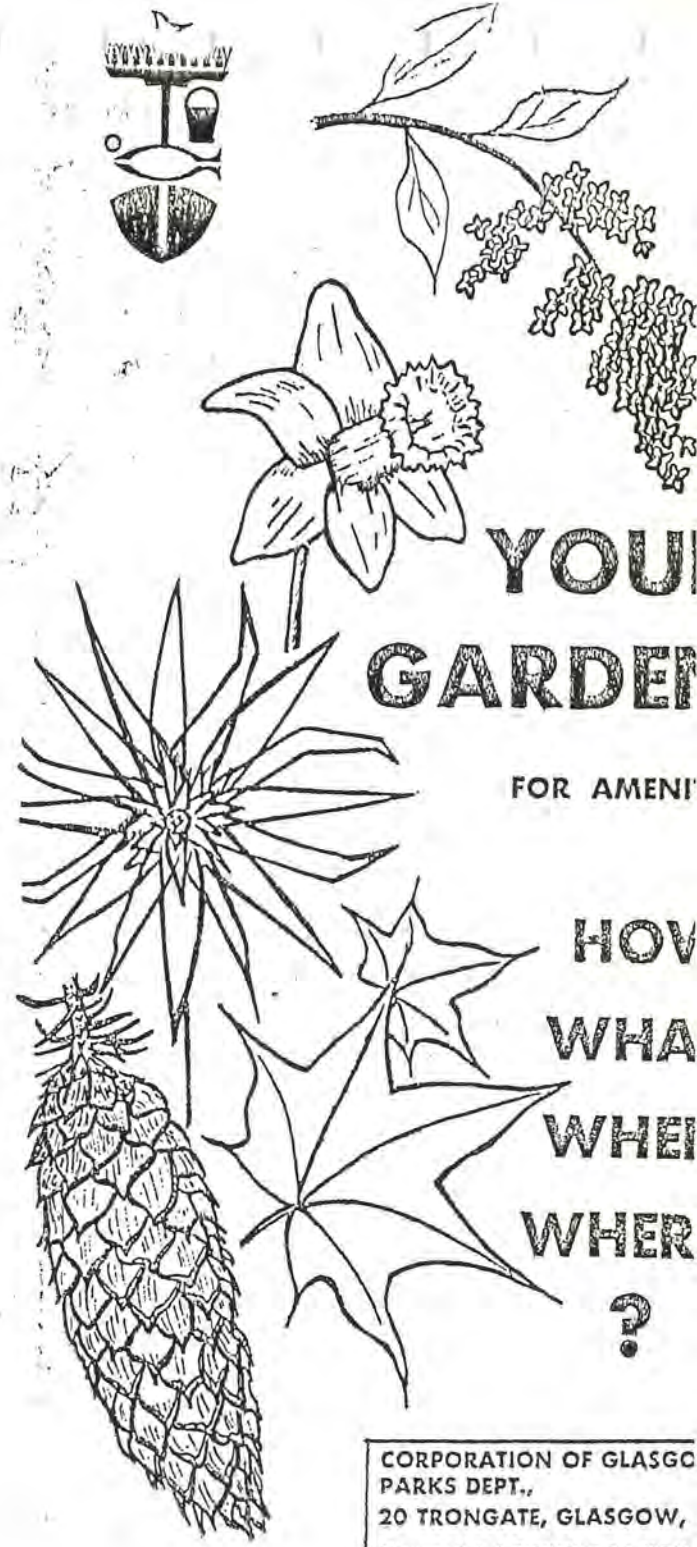
Pools Nymphaea—many vars. (water lily). Floating aquatic—Azolla, Lemna, Stratiotes. Submerged aquatic—Elodea, Hotonia, Ranunculus aquatilis.

Wild Garden—Astilbe, Crambe, Bergenia, Hosta, Sorrel, Rheum palmatum, Polygonatum multiflorum, Eupatorium.

Ferns— Adiantum pedatum, Onoclea sensibilis, Osmunda regalis, Polypodium vulgare.

Plants to encourage butterflies—Buddleia, Caryopteris, Nepeta, Sedum spectabile, Liatris, Lythrum, Veronica spicata.

Plants to encourage birds—Cotoneaster sp; Berberis sp; Daphne mezereum, Hawthorn, Pyracantha, Sorbus aucuparia.



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CORPORATION OF GLASGO
PARKS DEPT.,
20 TRONGATE, GLASGOW,
Director : S. A. J. OLDHAM, O.B.E., N.D.H.

The City Garden

This leaflet aims to serve as an introduction to garden care for the city dweller.
Your garden, if well cared for can contribute a great deal to improving your environment and help beautify the city.
Ask yourself if your garden is the perfect setting for your home or is it smothered by weeds, trampled to death or just uninspired and uninspiring. If it does need re-thinking and re-vitalizing how about making this a year you remember making a garden to remember.
From this pamphlet can be shown how you can copy or adapt ideas to suit your own garden.
Colourful gardens can transform dreary surroundings. If you feel you live in a grey area, start the ball rolling and give your neighbours ideas by making your garden the one they notice.
More detailed information and advice can be obtained from the Parks Department, and noted below are a list of pamphlets available on selective subjects.

Tree Care

Planting and Pruning
(Glasgow Tree Lovers Society)

Shrubs and Roses

List of Shrubs and Plants useful for flats and small gardens.
(Parks Dept).
Cultivation of Roses
(Parks Dept).

Lawn Care

How to maintain a good Lawn.
(Parks Dept).

Bulbs, Bedding and Miscellaneous Plants

(Parks Dept).

Care of Indoor Foliage and Flowering Plants

(Parks Dept).

Choice of Trees

(Parks Dept).

Plants for Troughs and Window Boxes

(Parks Dept).

TREE CARE

Tree Care

Of all the living elements which go to make-up a garden or landscape, trees require the greatest care in choice and siting, for whereas most gardens will provide room for many shrubs etc. there is usually only room for a few trees. Nurserymen and Garden Centres today offer such a wide and varied selection, that it is possible to find a suitable tree for almost any site or soil condition 'Tailor Made', thereby presenting some new facet of beauty in each and every month of the year.
Where faced with the difficulty of fitting trees into very confined spaces, there are now many fastigiate forms available and the notes in this pamphlet describe a selection under the heading 'Trees for confined space'. All selections have been chosen for either shape, flower, foliage or stem colour.

Planting

When Trees are planted in autumn, winter or early spring. If they arrive in frosty winter keep the roots well covered until the ground becomes suitable for planting. If the roots are dry, puddle in a mixture of soil and water prior to planting.

How Prepare a hole larger and deeper than the root spread. Remove stones and sub-soil and fill back with a mixture of good top soil, peat or compost with a handful of bonemeal. Drive into place, a stout stake near the centre of the hole before completing the planting. Ensure the stake is long enough to reach above the level of the lower tree branches, and into the 'head'.
Complete by tying the tree stem to stake in three places—near the ground, in the middle of the trunk and again in the head. Plastic ties ensure the tree is not strangled as the girth increases—replacement may be necessary every three years.

Older Tree Treatment

The first 10-20 years of a tree's life determines its shape, and at this stage, only light pruning should be necessary. Branches should be evenly spaced, and one main leader encouraged, when this is in character with the tree. Heavy pruning involves the removal of branches of more than finger thickness and should be carried out between the beginning of November—early March.
A troublesome school of thought which periodically manifests itself in this connection, holds quite simply that trees ought to be pruned, as hair ought to be cut. Trees, however, are to be regarded as teeth, not hair—they should only receive attention when something is wrong with them.
Where trees are already ruined beyond hope of recovery, or where their natural development is impossible, they should be eliminated progressively and replaced by suitable varieties.

1. Large Growing Forest Trees

Acer platanoides	Norway Maple	L. smoke resistant, suitable for specimen or avenue, S3.
A. pseudo platanus	Sycamore	L. hardy, Ht.80 Sp.50, S3
Aesculus 'Baumanni'	Horse Chestnut	L, large head, 'candle flowers', does not produce conkers, Ht 9
Fagus sylvatica	Beech	S.T. dense foliage, excellent as specimen, shelter tree or hedge Ht.80 -100 Sp.70, S3
F. sylvatica purpurea	Purple Beech	S.T. as above, contrast to green
Fraxinus excelsior	Ash	L. heavy to medium soil, elegan graceful, Ht. 90, Sp.70, S.5
Platanus acerifolia	London Plane	M.S.T. tolerant of atmospheric
Populus aurora	Poplar	L. fast growing, slender, compa screen, foliage beauty, control mild spurring.
Quercus cerris	Turkey Oak	L. dark foliage, fast growing Ht. 100, Sp.70, S.3
Tilia euchlora	Lime	L. withstands pollution, graceful pendulous Ht. 40, Sp.30, street
T. platyphyllos rubra	Red Twopped Lime	Ht 100, S.5.
Ulmus stricta var Wheatleyi	Cornish Elm	L. erect, columnar, Ht. 100, Sp

2. Medium sized trees (40'—50' on maturity)

Alnus glutinosa	Common Alder	Shallow roots, Catkins in March
Betula alba	Silver Birch	L. specimen tree, wind resistan bark. Sparse foliage, light filte
Prunus avium Plena	Gean	(white) Ht. April. May, autu
Salix vitellina	Golden Willow	L. striking golden bark, S.A.

3. Small trees for confined space

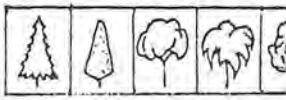
Cotoneaster frigidus		semi evergreen, red autumn be
Crataegus oxyacantha	Hawthorn	L. hardy, wind resistant S.3
Cercidiphyllum japonicum		Autumn colour, Spring frost p
Laburnum Vossi	Laburnum	Hardy, large pendulous lls, wee
Malus elevi	Flowering Crab	L. good foliage, decorative aut
Prunus amanogawa	Japanese Flowering Cherry	L. upright habit, pink semi-dou
Sorbus aucuparia	Rowan	L. erect, red berries in August.

4. Conifers (do not tolerate smoky atmosphere well. T must be planted fairly young in spring, just bef commences.

Cedrus atlantica glauca	Blue Cedar	Glaucous, silvery foliage, S.S
Chamaecyparis Lawsoniana	Lawson Cypress	Tall, pyramidal, excellent hedg
Larix leptolepis	Japanese Larch	Reddish twigs, withstands expo
Pinus sylvestris	Scots pine	L. Reddish bark, Ht. 90, S.5
Tsuga heterophylla	Hemlock Spruce	Hapet formerly. Well drained so Ht. 100, S.3

L. need for light to produce satisfactory growth
M.S.T. Moderate shade tolerated
S.T. shade tolerant

Ht. maximum height in feet
Sp. Maximum spread in feet



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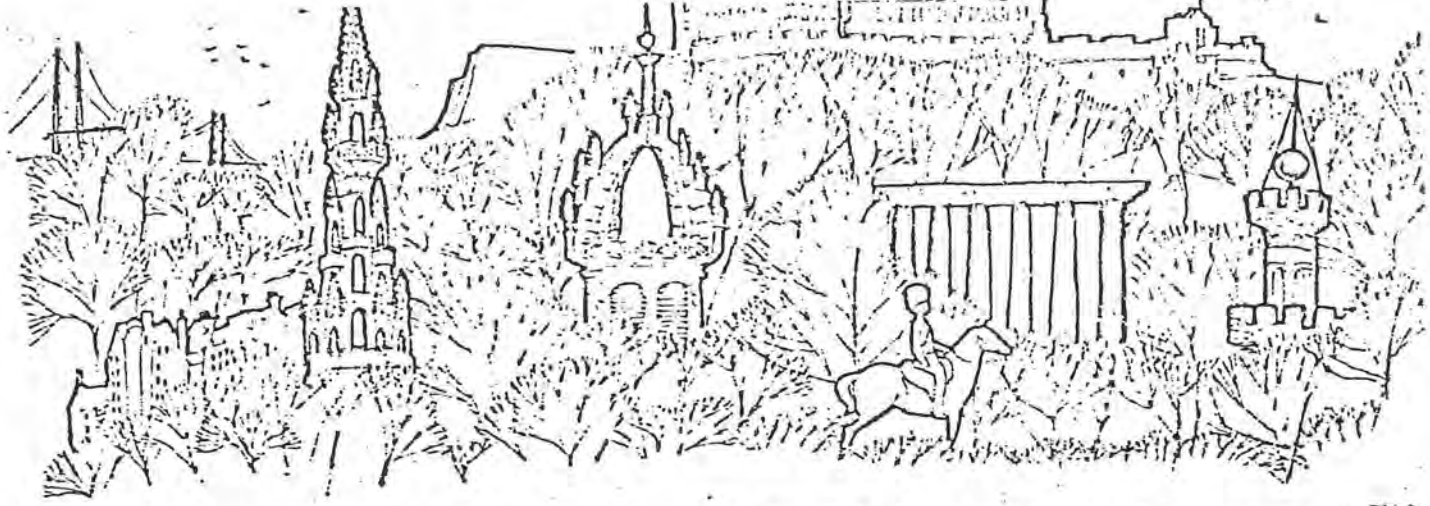
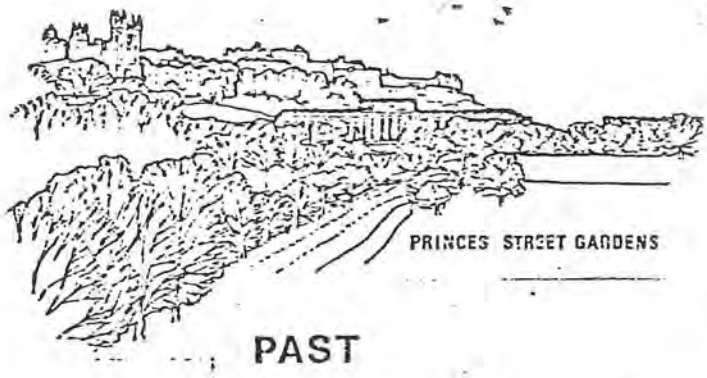


TREES IN EDINBURGH

The trees of Edinburgh are not only spectators of our history, having looked down on battle and plague, the birth of the New Town, the decay and renewal of the Old Town, the shift of population and all the changes in the City, but they have themselves been part of the structure of Edinburgh reflecting our different ways of living and needs.

The trees and woodlands, first part of common land, becoming part of Royal lands and finally acquired by public bodies, the District Council and Government Authorities, have been part of the gradual social evolution of our time.



PRINCES STREET GARDENS

PAST

Edinburgh has grown from the original settlement perched on the naturally defensive castle rock and surrounded by lochs, marshes and scattered hills and streams until today the built-up area covers a total of over 17,000 acres.

The major open spaces in the City are still the surrounding hills and river valleys such as the Water of Leith. Nearly all the lochs have gone and the formerly isolated villages such as Colinton and Corstorphine are now incorporated into the mass of Edinburgh.

Edinburgh citizens in the past had a great respect for the value of trees in the City and it is because of their earlier plantings that the City in general, and the New Town areas in particular, is the beautiful balance of architecture and trees that it is. Here the trees act as an admirable foil to the formal architecture and cool grey of the New Town buildings, forming a screen yet allowing the buildings to dominate the townscape as they were designed to do.

DUDDINGSTON VILLAGE

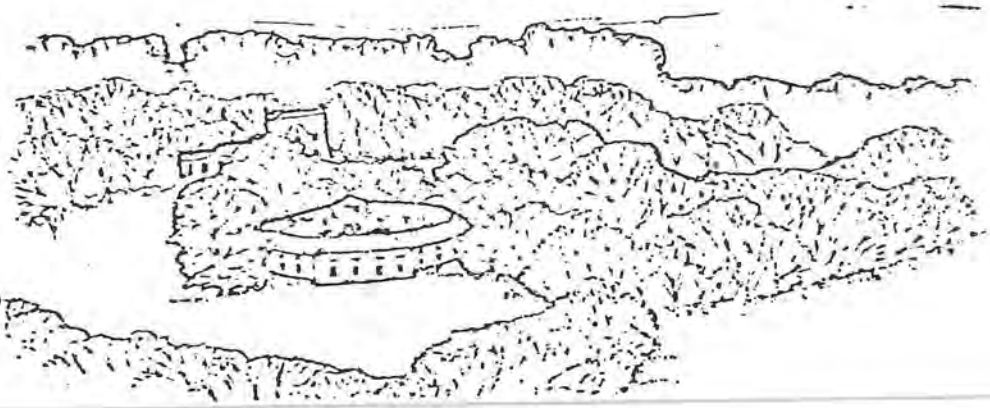
PRESENT

Outside the formal New Town Gardens the large areas of trees in Edinburgh are closely related to the hills and river valleys. Examples are Corstorphine Hill, the Water of Leith Valley and the Braidburn Valley.

The City is particularly fortunate in having these large sections of unbuildable land within her boundaries where trees can grow unhampered by development and which form the backbone of the past and present open space provision in the City and give it its unique landscape character.

There is an estimated one million forest trees in Edinburgh. This is equivalent to two trees for every man, woman and child.

The majority of this number, however, is made up of the smaller ornamental trees within private gardens. While a majority of the forest trees are in the larger private gardens, streets



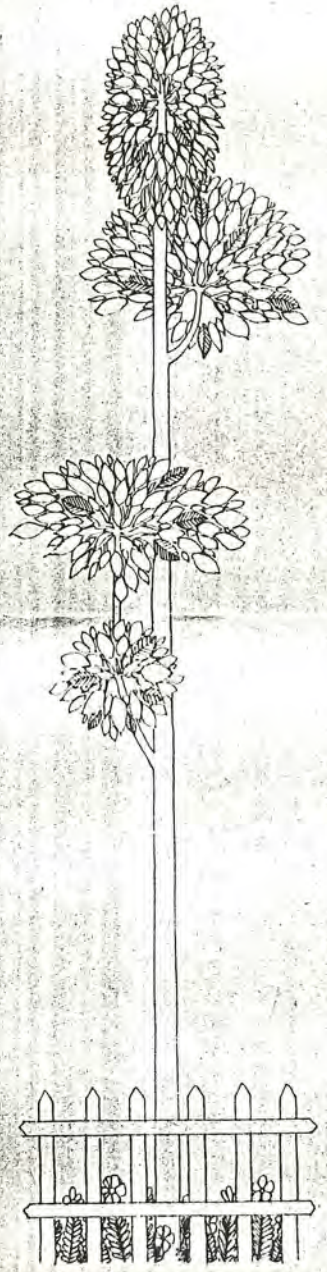
Tree Tips

New York City has over six hundred thousand street trees. In a city of concrete, stone and paving, trees make our streets more beautiful and our city a better place in which to live. Trees are air conditioners. They help to remove pollutants from the air; they absorb noise; they provide oxygen for us to breathe and they give cooling shade on hot days.

We are concerned that the trees in this city will not survive without help. The Department of Parks and Recreation has never had enough manpower to inspect even periodically the extraordinary number of trees in this city, much less to care for them at regular intervals. With budget cuts, it will be possible for the remaining Department forces to take care of only damaged or sick trees. We New Yorkers must do the rest of the job.

We, the undersigned, ask your help–for your trees' sake and for your sake. We offer our advice. Write any of us. Get together with your neighbors and watch your block stay green.

Department of Parks and Recreation, N.Y.C., 830 Fifth Avenue, N.Y. 10021
State Park and Recreation Commission for the City of New York,
1700 Broadway, N.Y. 10019
City Planning Commission, N.Y.C., 2 Lafayette St., N.Y. 10007
Brooklyn Botanic Gardens, 1000 Washington Ave., Brooklyn 11225
Citizens Committee for N.Y.C. Inc., 345 Park Ave., N.Y. 10022
Council on the Environment of N.Y.C., 51 Chambers St., N.Y. 10007
Environmental Action Coalition, Suite 1130, 156 Fifth Ave. N.Y. 10010
The Federation of City Wide Block Associations, 51 Chambers St., N.Y. 10007
Green Guerillas, P.O. Box 673, Canal St. Station, N.Y. 10013
The Horticultural Society of New York, 128 West 58th St., N.Y. 10023
L.A.W.–Neighborhood Tree Corps in:
Manhattan-Goddard-Riverside Community Center
Queens-Greater-Ridgewood Restoration
Bronx-Isham Park Restoration
Brooklyn-Park Slope, Prospect Heights, Winsor Terrace
Magnolia Tree Earth Center, 1512 Fulton Ave., Brooklyn 11216
New York Botanical Garden, Bronx 10458
The Parks Council, 80 Central Park West, N.Y. 10023
Queens Botanical Garden Society, Inc., 43–50 Main St., Flushing 11355



NAAS -National Association of Design Services donated artwork, type, and mechanical.
Reprinted by the NYS Office of Parks and Recreation.

Plants suitable for a tree pit in New York City (plant small plants to minimize damage to tree roots)

Perennial Evergreen Groundcover Plants

English and Baltic Ivy ..... Hedera helix
Japanese spurge (green or variegated) .. Pachysandra terminalis
Periwinkle ..... Vinca minor

Perennial Deciduous Groundcover Plants

Virginia spiderwort ..... Tradescantia virginiana
Bugleweed ..... Ajuga reptans
Violet ..... Viola

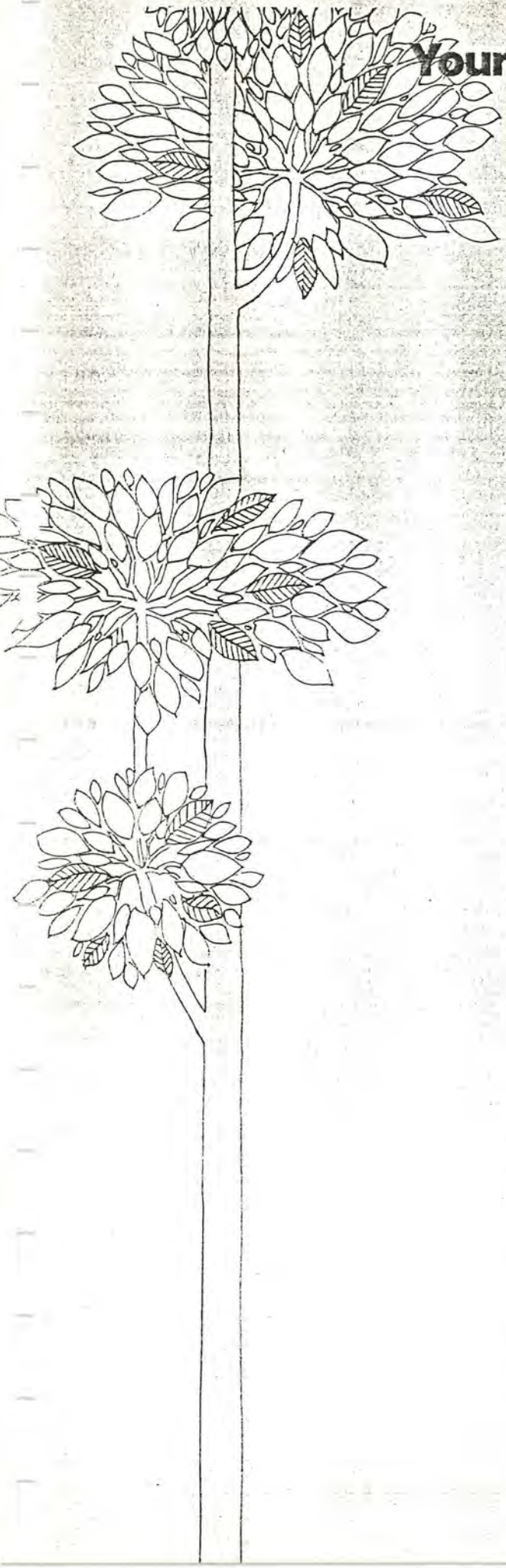
Annuals

Wandering jew ..... Tradescantia and Zebrina
Wax begonias ..... Begonia semperflorens
Impatiens ..... Impatiens
Dwarf marigolds ..... Tagetes

Bulbs

Winter aconite ..... Eranthis hyemalis
Snowdrops ..... Galanthus nivalis
Siberian Squill ..... Scilla siberica
Glory of the Snow ..... Chionodoxa Luciliae
Grape hyacinths ..... Muscari
Miniature daffodils ..... Narcissus

Tree Tips



Your Street Tree Does You Favors— Please Do a Favor For It.

Keep the tree pit clean:

Remove glass, garbage, weeds and other refuse from the soil on a regular basis.

Protect trees from dogs:

Keep dogs away from the tree pit. Dog waste is extremely harmful to delicate tree roots and bark.

Protect trees from people:

Do not let people chain bikes to trees. Do not nail or wire posters or signs to trunks or branches. For hanging a temporary sign, use cotton string. Remove foreign objects from tree branches. Do not climb in trees.

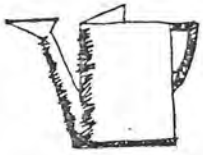
Cultivate the soil regularly:

Soil in tree pits gets packed down very hard. Using a hand cultivator or stick, loosen the top two inches of soil around the tree so that water and air can reach the roots. Do not dig deeper than two inches as you may injure the tree roots.

Do not poison the soil:

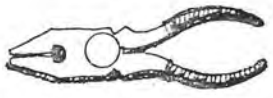
Keep pollutants such as oil, gasoline and detergents out of the tree pit. In winter, use calcium chloride instead of rock salt for de-icing side walks. Better yet, use sand.

Water trees in summer:



Water newly planted trees regularly with 6–8 pails (about 15–20 gallons) of water twice a week during hot and dry summer months. In spring there is usually enough rain for the tree; in fall, watering may damage the tree as it needs to "harden off" before winter. Water old trees only when it is hot and dry, using 6–8 pails of water at a time, twice a week. Deep watering encourages deep roots and healthy trees–slow watering allows water to seep down properly. Over-watering can hurt the tree. Check with your neighbors to be sure they are not watering the same tree that you are.

Remove tight support wires:

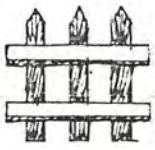


The trunks of newly planted trees are burlap-wrapped and supported by stakes and wires. Remove plastic ties and burlap about a year after the tree has been planted. Remove support wires as soon as they begin to cut into the tree trunk and at the same time, remove wooden stakes and carefully fill stake holes with new soil. Remove tree guards before they tighten around tree.

Plant ground covers:

After a tree has been in place a year or more, you may plant shallow rooted plants and flowers in the tree pit. (See attached list of approved kinds)

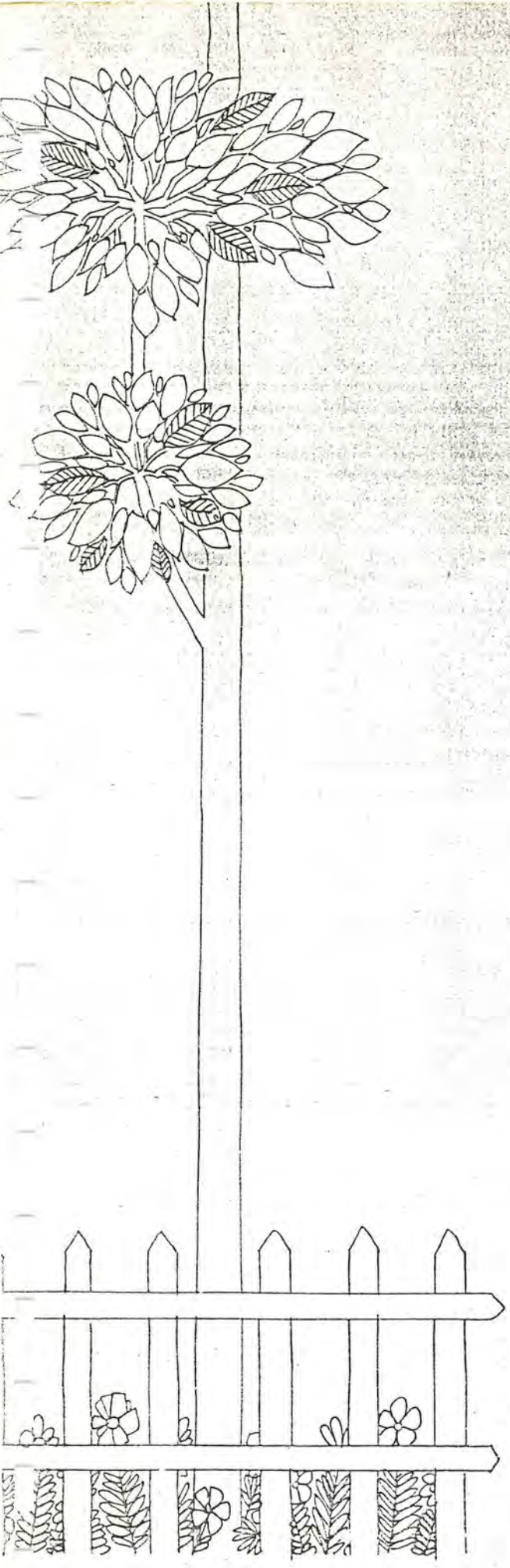
Fences and guards:



Tall tree guards protect trees near heavy auto traffic and around schools. They are expensive. Call The Parks Council (799-6000) for information.

Bricks, placed at ground level (with 2"–3" spaces between them, to enable water to penetrate to the roots) help to guard trees. The bricks should be removed and replaced when they become uneven so that people will not trip.

Consult your neighbors before putting up fences or



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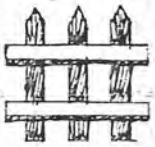

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Bricks, placed at ground level (with 2"–3" spaces between them, to enable water to penetrate to the roots) help to guard trees. The bricks should be removed and replaced when they become uneven so that people will not trip. Consult your neighbors before putting up fences or guards of any type.

Report damaged trees:

If your tree is damaged or in need of professional care, report the trouble in writing to: Division of Forestry and Horticulture, Department of Parks and Recreation, at the following addresses:

Manhattan:	655 Madison Ave., N.Y., N.Y. 10020
Brooklyn:	Litchfield Mansion, West 5th Street and Prospect Park West, Brooklyn, N.Y. 11215
Queens:	Administration Bldg., Park Lane South and Union Turnpike, Kew Gardens, N.Y. 11415
The Bronx:	Administration Bldg., Bronx Park East and Birchall Ave., Bronx, N.Y. 10462
Richmond:	Clove Lakes Field House, 1150 Clove Road, Richmond, New York 10301

You may also ask any of these offices to issue a permit to hire a qualified tree service to take care of street trees.


The Greening of Boston Program

The Greening of Boston *Program*

Look around your street and your neighborhood—would some trees make it more pleasant? Would a trash barrel make the area neater? Do you need some playground equipment? How about a quiet mini-park for reading and relaxation? You can spruce up your street, brighten your block and make your neighborhood a better place to live!

The Greening of Boston Program can help you and your neighbors improve your neighborhood with the addition of trees, benches, shrubs, playground equipment, trash barrels and similar street furniture items. We can match neighborhood funds on a 3 to 1 basis, and provide professional design and administrative services to help implement your project.

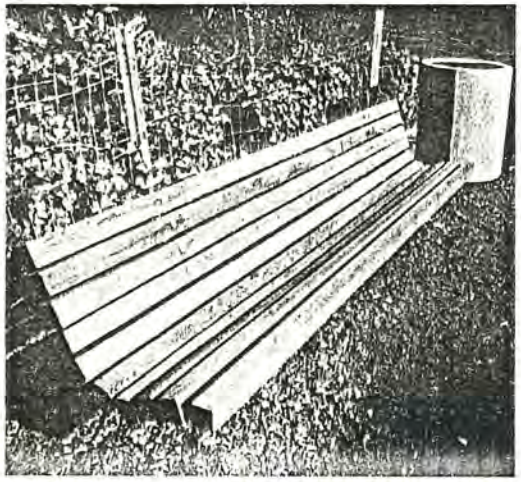
The goals of the program are to upgrade Boston's environmental quality, to visually enhance the neighborhoods and to increase citizen participation in neighboring planning. An imaginative and rewarding program which works in partnership with Boston citizens, the Greening Program acts as a direct, practical and personal service for the city's neighborhoods.

How You Can Participate

When Jerry Adomunes decided that the bus stop in front of his Adams Street, Dorchester, variety store ought to be a more pleasant waiting place for people, he called the Greening Program Coordinator for advice. Together they discussed the project, visited the site and selected a handsome wooden planter-bench from the Greening Program's catalogues of durable, well designed street furniture. In only six weeks the equipment was in place and Adomunes' vision had become a neighborhood improvement.

In Roxbury, four small playgrounds were created when administrators of the St. Francis de Sales School, Paige Academy and the Busy Bee and Hawthorne Day Care Centers sought help from the Greening Program. Cutting through red tape, designs for the areas were drawn. Safe, high-quality playground equipment, suited to each site, was selected, ordered and shipped. The installations were made by parent groups who had banded together as construction workers on their school's project.

A tree in front of an East Boston home, a mini-park for the elderly in Jamaica Plain, window boxes on a Dorchester triple-decker, bicycle racks for a school in Allston... these are a few of the myriad ways Boston neighborhoods have been beautified through the Greening Program.



How to Make the Greening Program Work for You

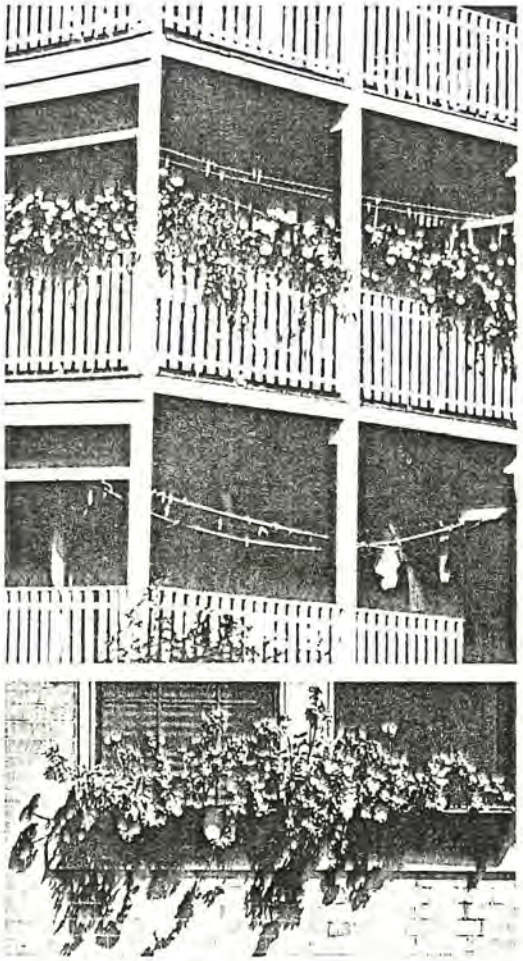
Meet with your neighbors and discuss what improvements would be most beneficial to your area. What would make your neighborhood a nicer place to live and work? Think about who uses your street—Elderly people? Children? Shoppers? How do they use it? When? What do the users of your street need?

Greening Program projects can be done on most publicly owned land with the permission of the city of Boston, and on most privately owned land with the owner's permission. For example, projects can be built at parks and other small open spaces, city sidewalks, shopping areas, bus stops, apartment and public buildings. All projects must be visible and accessible to the public, so that everyone can enjoy the improvements. Both individuals and groups can participate in the program. Merchants, neighborhood associations, civic groups, church clubs, fraternal organizations, schools, social service agencies and environmental groups have already completed projects with the Greening of Boston Program. The Greening staff will act as general contractor for your project, working with you each step of the way.

Professional Design and Administrative Services are Provided

The Greening Program Coordinator, the Landscape Designer and your group's representative will act as a team to plan, design and implement your project. We will visit your site to advise your group on items appropriate for your budget, and for your site's use and character. Look over our catalogues of well-designed, handsome street furniture and play equipment for ideas. Our Landscape Designer will advise on selections and prepare an overall site plan for your project. She will also recommend trees, shrubs and landscaping for your site.

The Coordinator will handle all the details of implementing your project: research, planning, permits and all arrangements with manufacturers, private contractors and shippers for prompt delivery and installation of the improvements.



Funds for Greening Program Projects are Available

The Greening Program operates on a generous three-to-one cost-sharing basis and provides as much as $1500 for a single project. For example, if your group's project totals $1200, including delivery and installation, $900 will be paid by the Greening Program. The remaining $300 comes from tax-deductible donations raised by you and your neighbors.

Fund Raising

Attracting donations is simple, and helps people become involved with community activity. Some of the ideas that have proven successful are block dances, bake sales, garage sales, potluck dinners, auctions and door-to-door fund raising.

Leaders in your own garden club, church group or community center may have other ideas; talk it over with them. Talk with your landlord, your local merchants and your Little City Hall manager. Let your local weekly newspaper know the improvements you are planning; they'll help you publicize the project and generate the funds you need. What's good for the neighborhood is good for everybody, and everybody wants to help once they learn what can be done.

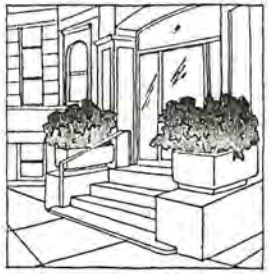
Maintenance

To assure that your project is a permanent asset to your community, we ask that every participating group sign a maintenance agreement. Your promise to care for the project—picking up litter nearby, pruning and watering trees, re-staining street furniture and so forth—is an essential element to the success of every project. The Coordinator and the Landscape Designer will furnish all the information you'll need to care for your project.

Picture These in Your Neighborhood...

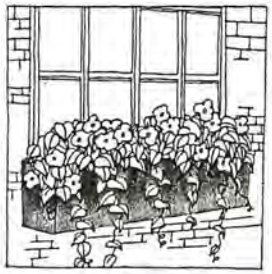
Trees

Think how pleasant it would be to have a graceful line of trees to brighten your street or your neighborhood shopping area. Did you know trees clean the air and provide oxygen, shade and protection from wind? Our landscape design consultant will suggest trees that are resistant to city stresses and appropriate for your area.



Planters and Shrubs

Tasteful, durable, wooden and concrete planters are available in various sizes and shapes. Filled with shrubs, flowers and even trees, planters add a touch of living color to your street. Our landscape designer can suggest varieties of plant material in a suitable design for your planters.



Window Boxes

Turn your street into an appealing, vivid area with window boxes filled with many colored flowers, herbs or vegetables. When you have a group interested in buying at least 20 window boxes, give us a call. We'll arrange to have sturdy wooden or fiberglass window boxes delivered, along with soil, to your neighborhood.

Benches

Do you need benches in your local park, at your bus stop, near your store or in your playground? We have selected a variety of styles of attractive, well-designed wooden benches, and can help you choose the bench most suited to your neighborhood's architecture. We have backless benches for waiting, benches with arms and backs for relaxing, and even benches with small planters attached.

Trash Containers

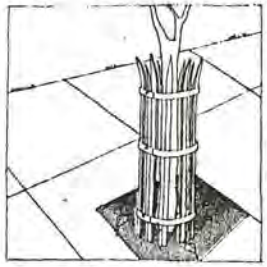
Bothered by litter in your neighborhood? Get a trash container from the Greening Program. Concrete or wooden heavy-duty trash containers suited to your area are available. The city will empty the trash container if it's on public property, such as a sidewalk. Trash containers can make a tremendous difference in the appearance of your store front, school yard or community center.

Playground Equipment

Does your school, community center or local playground need new or additional equipment? We've combed the catalogues and selected the safest, most imaginative new play equipment ideas—equipment designed to encourage creative play and to be beautiful additions to your neighborhood, too. We have traditional metal swings, slides, seesaws and climbing frames, and innovative wooden stepping timbers, clatter bridges, balance logs and climbing arches.

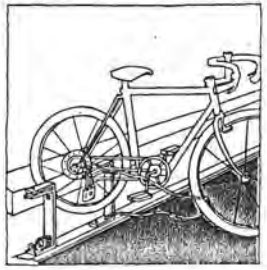
Bollards

Ornamental bollards in wood and cement, round or square, can be used in many ways: for defining areas, such as separating a playground from the rest of a park, for directing pedestrians in shopping districts, for sitting, resting and leaning, and for keeping cars where they belong. We'll help with the selection and planning of the installation.



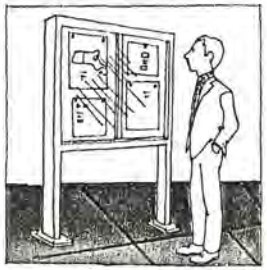
Tree Guards

Decorative and sturdy metal tree guards designed to blend with the architecture of your neighborhood will protect trees from dogs, vandals, snowplows and cars. Tree guards add an elegant and distinctive character to your neighborhood. The soil at the base of the tree can be protected in three ways—with a metal tree grate, cobblestones or a raised planter bed. Both tree grates and cobblestones allow air and water to seep into the roots without impeding pedestrian traffic, while raised planter beds detour pedestrians from the tree pit area and are useful on quieter streets.



Bicycle Racks

Many Boston residents are now bicycling to work, to school, to shopping centers and just for exercise. Because all bicyclists need a safe place to lock up their bikes, bicycle racks are a great convenience for your employees, customers and neighbors. Good-looking, practical styles are available.



Kiosks

Wouldn't it be helpful to have a central neighborhood bulletin board for notices and information? For example, residents could post flyers about plays, concerts, lectures, senior citizen events, special sales, transit information and health programs. We can design and install a handsome wooden or metal kiosk in your neighborhood center or local park.

Initiated as the Birthday Book Program of Boston 200, the city's bicentennial organization, the Greening of Boston is now a program of the Boston Foundation. The program is funded by donations from corporations and foundations, and all contributions to the Greening of Boston are tax-deductible.

The Greening of Boston Program Staff
Project Director, Susan Child
Program Coordinator, Katherine Greenough
Landscape Designer, Phyllis Andersen
Administrative Assistant, Linda Ulchak

For further information, write or call:
The Greening of Boston Program
Boston Foundation
City Hall
Boston, Massachusetts 02201
617/725-4846

City of Boston
Kevin H. White, Mayor

Illustrations by Alice Webber

APPENDIX 53.

Indication of a Past Initiative for a Public Education Film on Boulevard Trees in the City of Vancouver

TO: DAVE WEBSTER, SHELL OIL

FROM: VANCOUVER BOARD OF PARKS AND RECREATION

RE: FILM PROPOSAL - 10 - 20 MINUTES IN LENGTH.

POSSIBLE TITLES: " A NICE PLACE TO VISIT - A BETTER PLACE TO LIVE"

" VANCOUVER - A CITY FOR ALL SEASONS"

WHY A DOCUMENTARY FILM ON STREET TREES?

Trees and horticultural surroundings provide an important link to the shrinking wilderness. People have lived in harmony with their environment millions of years longer than they have been in conflict with it. The need for open space, natural environs and treed areas is in our estimation, psychologically imperative and an essential in the planning of new urban centres and for the reshaping of older ones.

The City of Vancouver is fortunate to have one of the finest Park Departments in the world. Not only does it boast more flowering street tree (60,000) than other cities but horticulturally its a growing urban centre unequalled for display gardens and botanical educational facilities.

WHY A DOCUMENTARY FILM IN 1978?

1978 will be a significant year for British Columbians as it will mark the Bi-Centennial of Captain James Cook's landing at Nootka Sound. It will be a year filled with historical reminiscences as well as present day celebrations. The proposal of a documentary film on Vancouver's street trees in 1978 would be a joint project befitting your company and the Vancouver Board of Parks and Recreation in this Bi-Centennial Year.

WHAT AUDIENCE ARE WE ANTICIPATING?

We envision the documentary street tree film to be educational in content. Many Vancouverites, British Columbians and Canadians are unaware of our city's street tree legacy. The film is important because it will serve a dual purpose: 1. Educate people about the outstanding public trees in our city and 2. Allow Vancouverites and Canadians to be proud in this celebration year of a horticultural achievement unequalled in any other country.

cont'd...

WHY IS SHELL OIL A GOOD SPONSOR CHOICE?

That's easy! All you need to know is where petroleum comes from and you're back to trees. By-products of ancient woody specimens naturally felled millions of years ago are presently heating Canadian homes and running our motor vehicles. A documentary film on today's trees sponsored by Shell Canada would demonstrate your company's appreciation.

Park Board Office,
2099 Beach Avenue,
Vancouver, B.C.
May 9, 1977.

APPENDIX 54.

Article on Vancouver City Trees

Visitors to Vancouver are always impressed by just how green this city is. Choose any high place and look down over different areas of the town and in places you can hardly discern the buildings for the trees.

Trees are a source of pride for Vancouverites. Maybe we don't all identify with them as completely as James Thurber's celebrated cousin—a delicate young man who was carried off in his youth by the same blight attacking the Dutch elms in his vicinity—but still we glory in the beauty of our trees.

Fred Hearfield, who supervises boulevard trees for the city of Vancouver, is especially proud of achievements in this regard. After the city engineering department has finished paving and curbing a road, Mr. Hearfield and his crew get to work planting—more than 40 species and over 300 varieties of trees throughout the city.

Take Water Street for example. You will now be able to see the vivid colors of maple trees on this street. Newly-planted liquid ambers, at present 15 feet tall but expected to grow to over 30 feet, are now gracing the corners of Water and Abbott with their fall foliage of reds and browns. You can also view ginkgos, one of the oldest species of tree dating back to prehistoric times, on some of the corners of Water Street.

Discover the varied trees that grace our cityscape

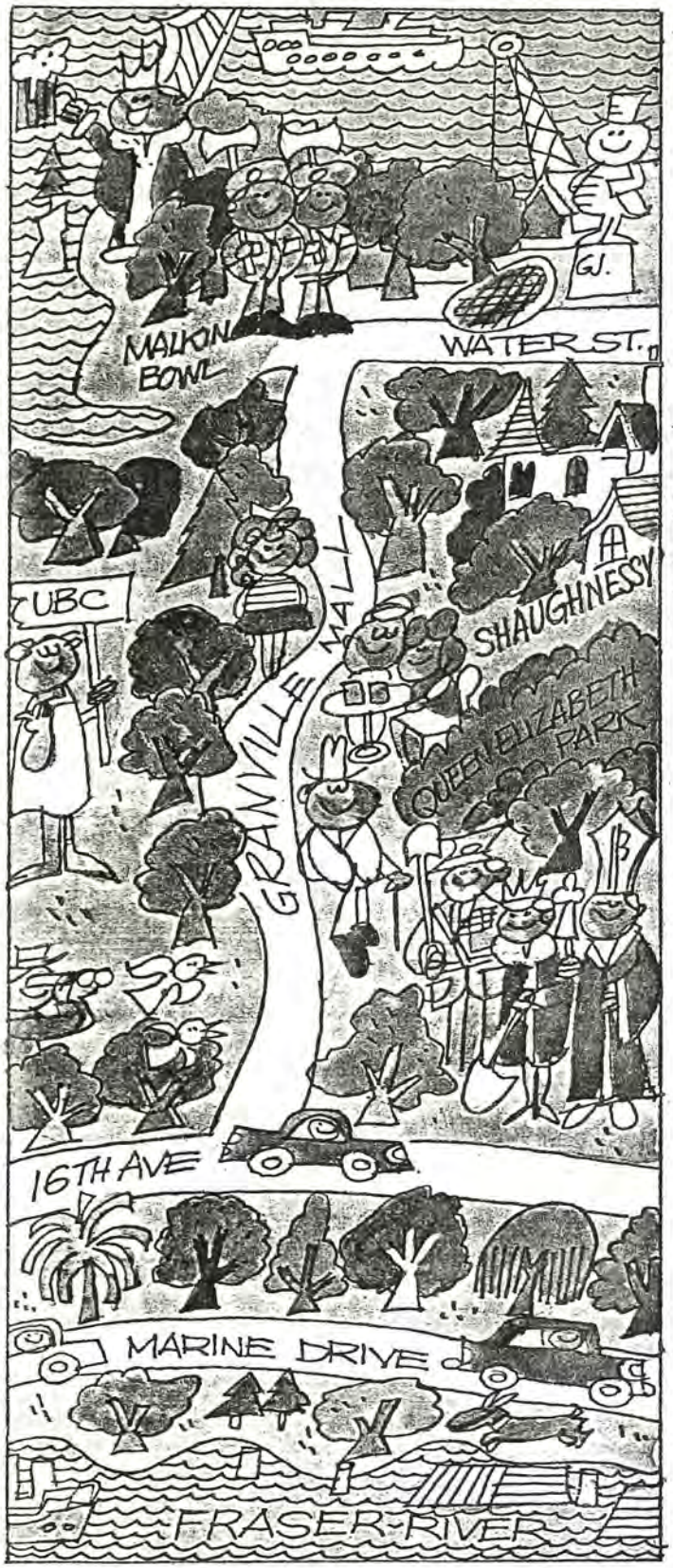
By BARRY PAVITT

Granville Mall has beech trees, West Broadway has limes. East of Cambie, between 16th and 25th Avenues, you can find groves of oaks and maples.

During the winter season the department plants up to 4,000 trees on the streets of Vancouver, You will not find too many graceful old chestnuts because their abundance of fallen leaves tends to clog drains and their roots penetrate the underground sewers. Nor are there many evergreens planted on the boulevards because their dense foliage can obscure children from the view of motorists. Fruiting trees are out, because youngsters tend to knock them about trying to get at the fruit.

But that still leaves plenty of choice. Look for the fine, small-leaved gladitsia on 41st Avenue in Kerrisdale or the flowering Japanese plums and cherries west of Arbutus from 16th to 25th. These are now sporting a lovely coppery foliage. There are catalpa on 10th Avenue west of MacKenzie for a while and then tulip trees the rest of the way. Stately London planes on 42nd west of Main are most impressive. Anywhere in the city, as long as there is a wide-enough strip away from the curb, the department will plant trees.

While most plantings take place during the winter when the trees are in their hibernation phase, some do take place during the summer, when the trees, such as those on Water Street, can be accommodated in containers. It's a big job,



literally, since a single tree, with its roots and soil, can weigh over a ton. The city uses cuttings rather than seeds, developed at the Sunset Nursery at 290 East 51st, and then nurtured at the city's tree farm near White Rock. In times of great demand stock is purchased from local growers and tree nurserymen.

Records have been kept since 1963 so that if you have a problem identifying trees on any street you can get an answer from the Sunset Nursery (327-2119). Mr. Hearfield and his staff estimate that they receive about a thousand calls a month—anything from identification to requests for information about pruning. The public is invited to visit the nursery and its greenhouses on 51st and see all the different species and varieties being employed for the future beautification of our streets.

This department is also responsible for the day-to-day maintenance of boulevard trees. These activities include fertilizing, spraying, pruning and watering. Crews receive a wide variety of requests, from removing nests of offensively-minded wasps to the swings of overly-active children. People can aid in the care of street trees by watering them. Mr. Hearfield suggests spudding holes about 12 inches deep and about two feet away from the trunk and watering the trees just as the grass verges are watered during rainless periods.

Apart from regular and routine plantings, special occasions are celebrated with trees. During Centennial Year, 1967, the city put up a hundred maples along Boundary Road. They are specimens of the 13 types of maple native to Canada. In the same year a hundred Almey crabapples (one of the few native flowering apples in Canada) were planted along 16th Avenue from Dunbar to the U.B.C. campus.

Commemorative plantings are quite common in Vancouver. A cluster of three oaks near Malkin Bowl in Stanley Park has a significant history. During the war, Canadian lumberjacks were formed into an army unit called the Canadian Forestry Corps. They set up sawmills and logging operations in Scotland to help meet Britain's lumber needs for the duration of the war. The commemorative oaks in honor of this corps were brought in from the Royal Forest of Windsor in Kew, Surrey and planted in November, 1946.

In the Shakespeare Garden just past Lost Lagoon you will find many of the trees mentioned in the bard's plays, such as the fern leaf beech, the tree of heaven and the laval hawthorne. Each has its own name plaque.

Three Great Oaks are also specifically marked—one planted in 1916 for the Shakespeare Tercentenary, another, *Comedy,* planted in 1921 and the third *Tragedy* in the same year. Nearby is the dogwood dedicated in 1967 by beloved radio actor John Drainie.

The original Siwash Rock tree, a very old Douglas fir reaching 12 feet in height, is no more, but the Parks Department drilled into the rock and planted a new fir. Two years old, it has already grown to a height of four feet.

Of course, no mention of trees in Stanley Park is complete without some reference to the famous Hollow Tree. Of antiquarian interest here is the fact that the future George V, when visiting Vancouver in 1905, was taken for the traditional carriage ride through the park. A highlight of this drive was a stop at the Hollow Tree in which a bar had been set up to slake the royal thirst.

Most of the original trees in the park were logged in the last century but planting has been going on since those days. Sometimes as many as 20,000 trees were put up in one year, although the average is now about 2000. Some of the most popular new trees are the willows at Lost Lagoon and the dogwoods planted in 1938-39 along the curves of the road near Lion's Gate Bridge.

Incidentally, outside Vancouver but still close enough, Lighthouse Park contains the last stand of virgin trees in our area. These are the great Douglas firs of the kind that were logged from Stanley Park up to the 1880's. You can also see some of the better specimens of arbutus here.

Back in Vancouver you can visit more commemorative trees at Queen Elizabeth Park, a 30-foot Cedar of Lebanon planted by Lord Alexander in 1956, a Sherwood Forest Oak planted by the future Queen Elizabeth in 1951 and also a robinia planted by Geoffrey Fisher when he was Archbishop of Canterbury. Vincent Massey, Canada's first native-born Governor-General, planted a Canadian maple here in 1952 and now it's a tall national specimen.

While in this park, pay some particular attention to the

continued next page

Discover B.C. ... *continued*

Parrotia Persica in the planters outside the conservatory. Each leaf is spectacular in its shades of orange, crimson, scarlet and purple—a real feast for the eye.

Tree lore breeds many enthusiasts. Unfortunately though, there has been no real inventory of Vancouver's memorable trees. Each enthusiast has his own favorites—the colorful Oxydendron dating from 1910 to be found in Shaughnessy's Crescent; the big Red Oak, in its autumn scarlet, near the bandstand in Alexandra Park; the Cunninghamia (Chinese fir) looking like a monkey-puzzle, in Angus Park are a few of the notable favorites. Many rare or unique trees, of course, are in private gardens. There is a lovely huge weeping beech in a backyard at Blanca and 29th and the largest redwood in the area is to be found on the Hycroft Estate, site of the University Womens Club. You can find a fine dove tree at 49th and Marine and a little further on two large ginkgos at Angus and Marine. And then there is the true cedar, pruned to grow like ivy along the outer wall of the Park Board office in Stanley Park. This is an entirely different species from what is commonly known as a cedar, which is in fact a *Thuja*. Enthusiasts of the monkey puzzle tree, bizarre in shape and a cat's nightmare, can find their favorite adjacent to the south end of Lion's Gate Bridge or, in enormous form, at the corner of Bellevue Avenue and 15th Street in West Vancouver.

Perhaps, some day, a dedicated student will compile a list of Vancouver's most outstanding trees, but in order to do so he will have to consult the learned.

Which brings one naturally to the U.B.C. campus—one of the best areas for documented trees. Graduating classes have traditionally planted trees or groups of trees from as long ago as 1919. From that date to 1930 the groups consisted of oaks and basswoods. More recent additions include American elms, davidia, yellow cedars and maples.

The staff at the Botanical Gardens of U.B.C. publish a magazine called *Davidsonia* which contains a wealth of information about campus plants, including many photographs. Herein you will find cottonwoods, Japanese cedar, smoke and tulip trees, a corkscrew willow, a Japanese pagoda tree and many others both rare and common. With *Davidsonia* as a guide you can pass many an informative hour strolling around U.B.C.

For lovers of myth and academic tradition there is a story out here in the groves of academe. Several of the sycamore trees around the medical buildings are from cuttings taken from the Tree of Hippocrates. This famous tree on the Greek island of Kos is supposed to have sheltered the great doctor while he was teaching. Now old and hollow with its branches propped up with marble columns, its local progeny are there to inspire young would-be doctors at U.B.C. to emulate the creator of the Hippocratic Oath.

The VanDusen Botanical Gardens, officially opened in August are, needless to say, rich grounds for arborial browsing. Trees are central to the garden's arrangement, where plants have been set out to demonstrate botanical relationships. Thus, a section devoted to eastern American flora features sugar maples and deciduous hardwoods, whereas the heather garden, designed to suggest moors and bleak prospects, is populated by dwarf conifers. The gardens have a wide selection of maples, ranging from diminutive, lacy oriental varieties to our familiar west coast giant, *Acer macrophyllum* with its huge dinner-plate sized leaves. Unusual trees include gingkos, sequoias, and a Kentucky coffee tree, but familiar trees are not forgotten, such as cherries and magnolias, which are at their showy best in spring.

Vancouver, aided by its mild climate, has a kind of collective green thumb. If you believe with poet Joyce Kilmer that you will never see a thing so lovely as a tree, then our city is an eminently appropriate place for exploring.

APPENDIX 55.

Example of Door Hangars giving
Reason for Major Projects

CITY OF SAN JOSE

STREET BEAUTIFICATION PROGRAM

The tree in your parkway should be replaced by a healthy tree. The Evergreen pear tree has been designated as the official street tree for your street.

Trees are furnished by the City and planted by the residents. If you would like a replacement tree, call the City Hall, 277-4000, extension 4551 and a tree will be delivered or you may pick one up if you wish.

Thank you for helping us to beautify San Jose.

A. R. TURTURICI
Director of Public Works

TREE CARE

Please observe the following suggestions:

WATER: Please water the new street tree during dry weather. Run water slowly from a garden hose for a half hour each week into the plastic grate which has been installed next to the tree. This will help roots to grow deeply and reduce root damage to sidewalks and landscaped areas. A layer of compost or leaf mold one inch thick will help to keep the tree roots moist.

FOOD: Several applications of an organic fertilizer during spring and summer will help the tree grow. Apply iron chelates if leaves become yellow.

PROTECTION: Protect the tree from wind damage by adjusting the tree ties as it grows. Remove all weeds around base of tree as they rob the tree of water. Loosen tree ties when they tighten around trunk.

PRUNING: Prune back long hanging limbs to prevent wind breakage.

THANK YOU FOR HELPING US

A. R. TURTURICI
Director of Public Works

CITY OF SAN JOSE

STREET TREE PLANTING PROGRAM

We are preparing to plant street trees in your neighborhood. The intent of this program is to create a more pleasant environment through the establishment of trees in the public right of way. If you have a sidewalk adjacent to the curb, the tree will be planted 3 to 4 feet in back of the sidewalk. The planting contractor will use every precaution to not damage existing landscaping. No prior notice will be given when the trees will be planted. The City Arborist has selected a tree species that will be most compatible with the site.

Planting locations have been indicated by a large green "T" painted on the curb. In selecting the location for each tree, we have to consider many things, including trees adjacent to the street right of way, other landscaping, utilities, stop signs, and other street improvements. We maintain the following clearance whenever possible:

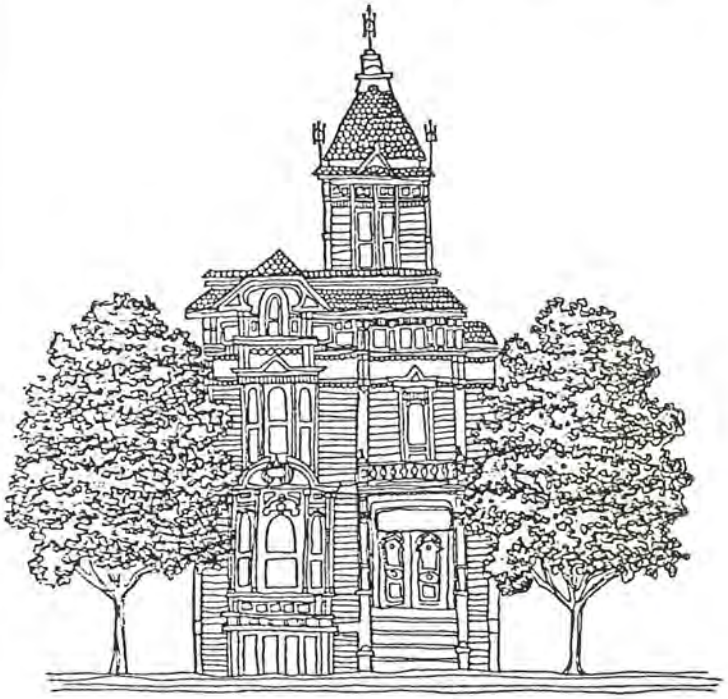
1.	Street lights	20 feet
2.	Underground utilities	5 feet
3.	Driveway aprons	6 feet
4.	Sewer lines	10 feet

(OVER)

Scheduled Tree Trimming

The parkstrip trees on your street have been scheduled for trimming within the next few days. It will help us if you can avoid parking cars under the street trees until they have been trimmed. If you have any questions, please call our Division of Landscape Architecture at 277-4531. Thank you for your cooperation.

A. R. Turturici
Director of Public Works



BOARD OF PARKS & RECREATION
City of Vancouver

Due to recent dry weather conditions, please help the Board of Parks & Recreation by watering the young street trees in front of your home.

Thank-you.

For further information please phone 327-2119

Dear _____ (name)

_____ (address)

about a possi-

condition:

he problem

by:

Meanwhile, we suggest that you:

TREE CARE

Please observe the following suggestions:

WATER: Please water the new street tree during dry weather. Run water slowly from a garden hose for a half hour each week into the plastic grate which has been installed next to the tree. This will help roots to grow deeply and reduce root damage to sidewalks and landscaped areas. A layer of compost or leaf mold one inch thick will help to keep the tree roots moist.

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THANK YOU FOR HELPING US

A. R. TURTURICI
Director of Public Works

APPENDIX 56.

Handouts to the General Public concerning Outbreaks of Pests and Particular Control Strategies

CITY OF SAN JOSE
CALIFORNIA

801 N. FIRST ST.
SAN JOSE, CA 95110
TELEPHONE (408) 277-4000

DEPARTMENT OF PUBLIC WORKS

DO YOUR TREES DRIP?

ARE YOUR SIDEWALKS STICKY?

During some parts of the growing season, many of our lovely shade trees drip a sticky material that can become annoying. The material is called honeydew, a sugar and protein insect exudate that tastes rather like the honey produced by bees. One kind of honeydew is thought to be the manna of the Old Testament. In the case of our shade trees, the honeydew producers are usually small, delicate, soft-bodied insects called aphids or plant lice.

Aphids come in many colors and forms, winged and wingless. While some species can live on a variety of plants, many others can only feed on one or two closely related kinds. Thus birch aphids cannot live on linden trees and vice versa. Aphids feed on plant juices and honeydew is their waste product. This sweet and nutritious material is attractive to many beneficial insects which help to control the aphid numbers.

Birches, maples, tulip trees, elms, lindens, English oaks, hawthorne, and many other shade trees that contribute so much to the beauty and health of our neighborhood, have all been imported here from distant landscapes. Some, like tulip trees and some elms, were part of the great American forest which covered much of the eastern United States when the first European settlers arrived. But a number of these trees originally came from Europe and so did many of the aphids which feed upon them. Unfortunately, the aphids have usually come here without the specific natural enemies which keep their populations under control in their native lands. As a result the aphids occur in much greater numbers than they would normally and the honeydew production becomes very noticeable.

Mature shade trees can support huge populations of aphids without harm, but the honeydew itself may annoy people by falling on parked cars, sidewalks, etc. In addition a harmless black mold may grow upon the honeydew, much as mold will grow in an old jam jar, and this may spoil the appearance of the leaves.

In the old days, people used water to wash off their plants, or sprayed a mixture of nicotine and water to kill the aphids. Nicotine is poisonous to people on direct contact, but since it is a natural plant product it is quickly broken down into non-toxic materials and the total effect of this method of control was neither broadscale or long lasting.

Ever since the introduction of the modern insecticides during World War II, people have been using those sophisticated poisons to control aphids. However, the constant use of these materials has been shown to frequently cause problems as serious as those attacked. For example, the insecticides kill off beneficial insects which may produce greater and more severe pest outbreaks, or trigger eruptions of entirely new pests. The result is the treadmill usage of more and more poisons against a widening range of insects. Eventually the insects may become resistant to the chemicals. Then the pesticide will not even be useful in an emergency and a valuable tool is lost.

(over)

WHAT CAN THE CITY DO?

Your city is supporting an urban biological control program to develop alternative methods of pest management. Each of the serious shade tree insect problems in the city will be studied and an economical, safe control method will be developed. In some cases water sprays have been found to be very effective. The excessive honeydew, which is really the only problem, is cleaned up. Some aphids are washed from the trees and either broken up in the process or eaten by other insects on the ground. (This is why it is wise to keep compost mulches on the surface of the ground under the trees. A mulch provides habitat for numerous species that will kill pest insects.) Aphids are also susceptible to fungus diseases which may be spread by the water. If water alone does not clean the tree sufficiently, soap (not detergent) and water spray may be used.

It is important not to wash off all the insects from the trees; some aphids must be left behind so that there is always food for the beneficial insects. Otherwise the next aphid that flies in will find none of its natural enemies present and be able to multiply unchecked. Soon the problem may be worse than before.

Other methods besides washing the trees are immediately available. These include management of ants, which frequently protect aphids from their natural enemies, and pruning methods which remove the favored habitat of some aphids (frequently the inner canopy or tender sucker growth).

The most permanent control of these aphid populations can be obtained by returning to the native area of the aphid and finding out what natural enemies are specific to it and not injurious to other insects. These often turn out to be tiny parasitic wasps whose young can live within the body of the aphid. When effective parasites can be found and imported the aphid population is reduced and no further management of the aphid is necessary as long as pesticides are not used on the tree.

One by one the problem insect populations on the shade trees in this city are being screened for possible biological control with specific parasites. When such beneficial insects are introduced their multiplication in a new area is usually quite slow, and it may take several seasons before the full effect is seen and a harmonious natural balance of insect populations established. Your cooperation in this new program is greatly appreciated by the City while these new, more economical and safe methods of insect management are sought and implemented. *

* Reprinted from: Urban Street Tree Project. Division of Biological Control. University of California, Berkeley, California 94720 6-6-74

We hope that this will answer any questions you might have concerning trees dripping and what your City is doing about it.

A. R. TURTURICI
Director of Public Works
City of San Jose

6-15-74

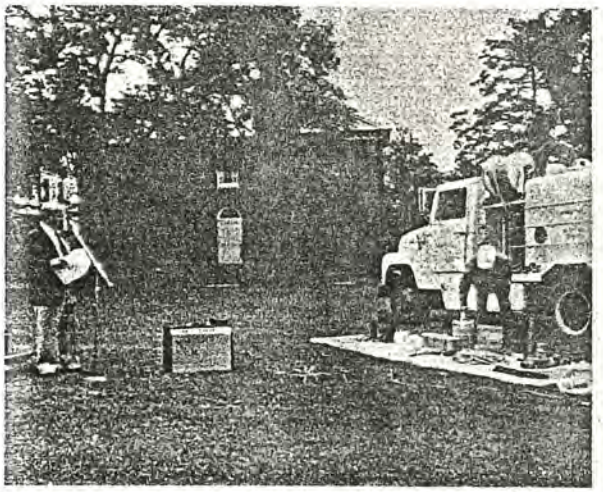
APPENDIX 57.

Example Training Aids
available in Arboriculture

ORDER FORM

NATIONAL ARBORIST ASSOCIATION

SLIDE/CASSETTE PROGRAM ON PROFESSIONAL SPRAYING OPERATIONS



This slide/cassette program has been designed to orient spray crews as well as pesticide enforcement officials in the techniques of proper shade tree spraying operations. It does not deal with insects, diseases or the use of pesticides and is in no way intended to be a substitute for the training provided for certification purposes. This program was presented "live" to enforcement officials of the U.S. Environmental Protection Agency in June, 1978.

Pesticide spraying when done properly and efficiently, with the proper equipment, is a very effective means of controling horicultural pests.

This National Arborist Association slide/cassette program includes 80 color slides showing the highest standards of professional spraying operations.

Also included is a cassette tape explaining each slide which can be used in any tape recorder. There are "beeps" in the tape which tell you when to change slides. The tape is also coded for automatic equipment. In addition you receive a script for your use if you do not wish to use the cassette.

THE COST FOR THE WHOLE PROGRAM ON PROFESSIONAL SPRAYING OPERATIONS IS $50.00*

**National Arborist Association members $25.00.*

Fill out the attached order form and return with your check to:

National Arborist Association, Inc.
3537 Stratford Road
Wantagh, New York 11793

NATIONAL ARBORIST ASSOCIATION SLIDE/CASSETTE PROGRAM ON PROFESSIONAL SPRAYING OPERATIONS

ENCLOSED PLEASE FIND CHECK FOR _____ (U.S. FUNDS)

PLEASE SHIP TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

NOTE: PLEASE TYPE OR PRINT. MAKE CHECKS PAYABLE TO *NATIONAL ARBORIST ASSOCIATION*

ORDER FORM

NATIONAL ARBORIST ASSOCIATION

SLIDE/CASSETTE PROGRAM ON THE TECHNIQUE OF SPRAYING

This slide/cassette program has been designed to train spray crews in the techniques of spraying. It does not deal with insects, diseases or the use of pesticides and is in no way intended to be a substitute for the training provided for certification purposes.

Spraying when done properly and efficiently is a very effective and rewarding aspect of tree care. This program provides an audio visual exposure to the techniques required to accomplish this.

The National Arborist Association slide/cassette program on SPRAYING TECHNIQUES includes 69 color slides dealing with the foreman's responsibilities, the function of the helper, reaching the tops of the trees, protecting the clients property and other aspects of spraying.

Also included is a cassette tape explaining each slide which can be used in any tape recorder. There are "beeps" in the tape which tell you when to change slides. The tape is also coded for automatic equipment. In addition you receive a script for your use if you do not wish to use the cassette.

THE COST FOR THE WHOLE PROGRAM ON SPRAYING TECHNIQUES IS $25.00 TO N.A.A. MEMBERS AND $50.00 TO NON N.A.A. MEMBERS.

Fill out the attached order form and return with your check to:

National Arborist Association, Inc.
3537 Stratford Road
Wantagh, New York 11793

NATIONAL ARBORIST ASSOCIATION SLIDE/CASSETTE PROGRAM ON SPRAYING TECHNIQUES

ENCLOSED PLEASE FIND CHECK FOR _____

PLEASE SHIP TO:

NAME _____

COMPANY _____

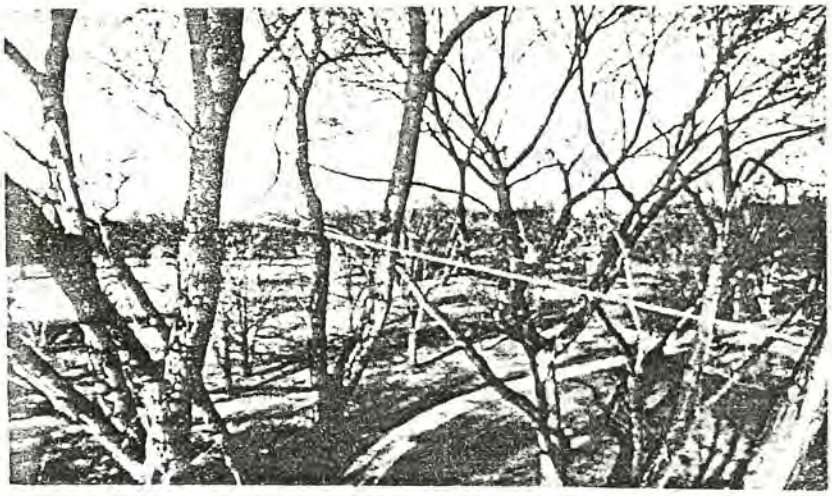
STREET _____

CITY _____ STATE _____ ZIP _____

NOTE: PLEASE TYPE OR PRINT. MAKE CHECKS PAYABLE TO *NATIONAL ARBORIST ASSOCIATION*

ORDER FORM

NATIONAL ARBORIST ASSOCIATION



SLIDE/CASSETTE PROGRAM ON THE TECHNIQUE OF CABLE BRACING

This Slide/Cassette program has been designed as a training aid for your benefit. It can be used to supplement field experience or other training programs such as the National Arborist Association Home Study Program.

It is much easier to teach a man in the field if he has had audio visual exposure to what you are trying to teach him beforehand.

The National Arborist Association slide/cassette program on CABLE BRACING includes 80 color slides detailing the technique of the eye splice, all the tools required and the actual installation of a cable.

Also included is a cassette tape explaining each slide which can be used in any tape recorder. There are "beeps" in the tape which tell you when to change slides. The tape is also coded for automatic equipment. In addition you receive a script for your use if you do not wish to use the cassette.

Also included are 12 sets of the National Arborist Association Standards on Bracing and Cabling. The cost for the whole program on Cable Bracing is $25.00 to N.A.A. Members and $50.00 to non N.A.A. Members.

Fill out the enclosed order form and return with your check to:

National Arborist Association, Inc.
3537 Stratford Road
Wantagh, New York 11793

NATIONAL ARBORIST ASSOCIATION SLIDE/CASSETTE PROGRAM ON CABLE BRACING

ENCLOSED PLEASE FIND CHECK FOR _____

PLEASE SHIP TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

NOTE: PLEASE TYPE OR PRINT. MAKE CHECKS PAYABLE TO NATIONAL ARBORIST ASSOCIATION.

ORDER FORM

NATIONAL ARBORIST ASSOCIATION

SLIDE/CASSETTE PROGRAM ON THE TOOLS AND TECHNIQUES OF PRUNING

This Slide/Cassette program has been designed as a training aid for your benefit. It can be used to supplement field experience or other training programs such as the National Arborist Association Home Study Program.

It is much easier to teach a man in the field if he has had audio visual exposure to what you are trying to teach him before hand.

The National Arborist Association slide/cassette program on the TOOLS AND TECHNIQUES OF PRUNING includes 79 color slides showing the various tools required to prune as well as the reasons for using them and various techniques such as cutting back, drop crotching and jump cuts.

Also included is a cassette tape explaining each slide which can be used in any tape recorder. There are "beeps" in the tape which tell you when to change slides. The tape is also coded for automatic equipment. In addition you receive a script for your use if you do not wish to use the cassette.

THE COST FOR THE WHOLE PROGRAM ON THE TOOLS AND TECHNIQUES OF PRUNING IS $25.00 TO N.A.A. MEMBERS AND $50.00 TO NON N.A.A. MEMBERS

Fill out the attached order form and return with your check to:

National Arborist Association, Inc.
3537 Stratford Road
Wantagh, New York 11793

NATIONAL ARBORIST ASSOCIATION SLIDE/CASSETTE PROGRAM ON THE TOOLS AND TECHNIQUES OF PRUNING

ENCLOSED PLEASE FIND CHECK FOR _____

PLEASE SHIP TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

NOTE: PLEASE TYPE OR PRINT. MAKE CHECKS PAYABLE TO *NATIONAL ARBORIST ASSOCIATION*

ORDER FORM

INTERNATIONAL SOCIETY OF ARBORICULTURE
NOVEMBER 1978
"JOURNAL OF ARBORICULTURE" INSERT

NATIONAL ARBORIST ASSOCIATION

SLIDE/CASSETTE PROGRAM ON TREE REMOVAL TECHNIQUES FOR THE PROFESSIONAL ARBORIST

This Slide/Cassette program has been designed as a training aid to provide an audio visual introduction to tree removal techniques. It can be used to supplement actual field experience.

It is much easier to teach a man in the field if he has had audio visual exposure to what you are trying to teach him, beforehand.

The National Arborist Association slide/cassette program on TREE REMOVAL TECHNIQUES FOR THE PROFESSIONAL ARBORIST includes 80 color slides showing different phases of tree removal.

Also included is a cassette tape explaining each slide which can be used in any tape recorder. There are "beeps" in the tape which tell you when to change slides. The tape is also coded for automatic equipment. In addition you receive a script for your use if you do not wish to use the cassette.

THE COST FOR THE WHOLE PROGRAM ON TREE REMOVAL TECHNIQUES FOR THE PROFESSIONAL ARBORIST IS $50.00.*

**National Arborist Association members $25.00.*

Fill out the attached order form and return with your check to:

National Arborist Association, Inc.
3537 Stratford Road
Wantagh, New York 11793

NATIONAL ARBORIST ASSOCIATION SLIDE/CASSETTE PROGRAM ON TREE REMOVAL TECHNIQUES FOR THE PROFESSIONAL ARBORIST

ENCLOSED PLEASE FIND CHECK FOR _____ (U.S. FUNDS)

PLEASE SHIP TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

NOTE: PLEASE TYPE OR PRINT. MAKE CHECKS PAYABLE TO *NATIONAL ARBORIST ASSOCIATION*

APPENDIX 58.

Example of Training Manuals available for Boulevard Tree Staff

ASPLUNDH
ENVIRONMENTAL
SERVICES
BLAIR MILL ROAD
WILLOW GROVE, PA 19090

NEWS RELEASE

AUGUST 1979

ANNOUNCING...

URBAN FORESTRY IN-SERVICE TRAINING SEMINARS

Asplundh Environmental Services (AES), a Division of the Asplundh Tree Expert Company, will provide in-service training seminars for your state or municipal employees.

In the past decade, urban forestry has become a refined practice. Arborists and other researchers have generated vast quantities of information on management systems, planning, public relations, education, and computerized data retrieval systems. To help you address current demands, provide information, and resolve urban forestry problems, AES provides professional training seminars emphasizing the practical and technical advances in urban forestry.

The course is conducted by urban forestry specialists in field work, practice and consulting. Courses are conducted at your facility and range in length from 2 to 5 days. Visual aids, texts, photos, slides and field demonstrations are all provided.

Twenty (20) lectures and field demonstrations have been developed on a variety of subject areas: pruning, spraying, street tree planting, and public relations, etc. A description of the lectures are presented in Table I.

Our multidisciplinary staff of professional registered foresters, horticulturists, landscape architects, terrestrial ecologists and wildlife biologists will tailor the seminars to satisfy your needs. Special lectures relating to urban tree inventory, tree pathology, entomology, soils analysis, computer systems, information transfer, and other services are also available as needed.

For further information and our free capabilities brochure call or write today:

Dennis E. Holewinski
Manager
Asplundh Environmental Services
Blair Mill Road
Willow Grove, PA 19090
(215) 784-4247

Attachment

ASPLUNDH
ENVIRONMENTAL
SERVICES
BLAIR MILL ROAD
WILLOW GROVE, PA. 19090

TABLE 1

LECTURE OUTLINES

ADMINISTRATIVE LECTURES

Lecture #1 (each lecture approximately fifty minutes in length)

Tree Program Communications/Media

1. Purpose of information dissemination
2. Importance of public education
3. Types of information to be portrayed
4. Methods of disseminating program information

Lecture #2

Establishment of a Municipal Tree Ordinance

1. Legal control of public shade trees
2. Establishment of a shade tree commission
3. Municipal arborist - appointment and qualification
4. Tree care specifications of a standard tree ordinance
5. Permit requirements
6. Standards of practice
7. Violation and penalty

Lecture #3

Compliance with Tree Regulations and Ordinances

1. Legality of ordinances
2. Basis of legal authority; tree commission/arborist
3. Enforcement of ordinance regulations
4. Permits to public utilities - specifications, inspection, and approval
5. Permits to private arborists - specifications, inspection, and approval
6. Loss, damage, or mutilization of public trees - prosecution
7. Interference with shade tree commission/municipal arborist
8. Violation and penalty

Lecture #4

Budgeting - Fiscal Organization

1. Determination of annual services and work loads
2. Annual work assignments by priority
3. Assessment of manpower
4. Equipment determination and maintenance
5. Plant material needs
6. Miscellaneous material requirements
7. Budgetary request needed to meet mandatory forestry services
8. Emergency funding sources

Lecture #5

Visual Screening

1. Aesthetics in the city
2. Value of trees vs. other visual barriers
3. Vegetation selection for visual screening
4. Effects of successful screening or unpleasant views
5. Maintenance of green fences

Lecture #6

Crew Organization

1. Personnel selection criteria
2. Organization of tree care personnel
3. Division of labor
4. Timing of important forestry activities - crew scheduling
5. Monitoring crew performance and efficiency
6. Work incentives

Lecture #7

Improvement of Wildlife Habitat

1. Value of urban wildlife
2. Kinds of wildlife in cities
3. Essential habitat requirements of urban wildlife
4. Management techniques for preserving urban wildlife habitat
5. Problems of wildlife in the city
6. Urban wildlife sanctuaries

TECHNICAL LECTURES

Lecture #1

The Tree

1. Reasons for having trees in cities
2. Growth habit
3. Native and exotic trees

Structure and Function of the Parts of the Trees

1. Stem
2. Leaves
3. Roots

Lecture #2

Soil

1. Main functions of soil
2. Soil components
3. Aeration of the soil
4. Soil minerals

ASPLUNDH
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BLAIR MILL ROAD
WILLOW GROVE, PA. 19090

Lecture #2 (Continued)

5. Soil organic matter
6. Soil water
7. Water stresses (too much, too little)

Lecture #3

Fertilizers and Their Use

1. How fertilizers act
2. Essential elements for food manufacture
3. Influence of essential elements on growth

Methods of Applying Fertilizers to Trees

1. Surface
2. Trenching
3. Feeding needles
4. Foliage feeding
5. Tree injection
6. Trimming and frequency of fertilization

Lecture #4

Review, questions and answers

Cavity Treatments

1. How cavities start
2. Objectives of cavity treatment
3. Procedure for treatment

Bracing and Cabling

1. Importance of the procedure
2. Types of Supports
3. Material used

Pruning a Tree

1. Need for pruning
2. How to prune
3. When to prune (continued in next lecture)

Lecture #5

Pruning tree (continued)

4. Line clearance
5. Disposal of prunings
6. Wound treatments
7. Safety practices

Lecture #5 (continued)

Damage Caused by Soil/Grade Changes

1. Symptoms
2. Factors governing extent of injury
3. Methods of treating trees at existing fills
4. Preventing injury from fills

Lecture #6

Other Damage Caused by Non-Parasitic Injuries

1. Lightening injury
2. Girdling roots
3. Smoke, smog and other air-pollutants
4. Leaf scorch

Lecture #7

Tree Diseases

1. Bacterial diseases
2. Root rots
3. Verticillum wilt
4. Heart rots
5. Dutch elm disease

Lecture #8

Control of Tree Diseases

1. Definition of disease
2. Symptoms
3. Causes
   a. Bacteria
   b. Fungi
   c. Viruses
4. Disease spread
5. Overwintering of disease organisms

Spraying Equipment and Practices

1. Types of equipment
2. Insecticide
3. Fungicides
4. Pest management
5. Trimming and frequency
6. Safety practices

Lecture #9

Transplanting Trees

1. Lifting
2. Mowing
3. Replanting
4. Transplanting preparation

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ENVIRONMENTAL
SERVICES
BLAIR MILL ROAD
WILLOW GROVE, PA. 19090

Lecture #9 (continued)

6. Artificial supports
7. Watering
8. Mulching
9. Wrapping trees

Lecture #10

Control of Insects Attacking Trees

1. Life history
2. General types of insects
3. Safety practices
   (much of the insect control will be covered under the Spraying Equipment and Practices - Lecture #8)

Lecture #11

Species of Trees for Urban Planting

1. Low growing
2. Tall or larger growing
3. Flowering
4. Special varieties
5. Low maintenance varieties

Diagnosing Tree Problems

1. What to look for
2. Treatable problems
2. Process of elimination for identification purpose

Lecture #12

Tree Removal

1. Removing limbs and tops
2. Use and types of ropes
3. Felling
4. Equipment used
5. Safety procedure

Lecture #13

Climbing

1. Use of ropes and saddles
2. Crotching in
3. Knot tying

Aerial Towers

1. Uses
2. Types
3. Safety procedures

ENROLLMENT FORM

NATIONAL ARBORIST ASSOCIATION PROFESSIONAL HOME STUDY PROGRAM

National Arborist Association
3537 Stratford Road
Wantagh, N.Y. 11793

Gentlemen:

Please enroll the following employees of my organization in your Home Study Program:

Name(s) of employee(s)

1. _____ 5. _____

2. _____ 6. _____

3. _____ 7. _____

4. _____ 8. _____

I understand that a complete package of eight sessions will be mailed directly to me, at the office address indicated below, for distribution to each employee. Sessions *cannot* be mailed directly to an enrollee at another address. All correspondence to an enrollee will be directed to him via the office address.

I enclose check for $_____ *($75 per enrolled employee) to cover total costs (exclusive of return postage) of the series of eight sessions. I understand that this payment is *not* refundable. I will endeavor to assure that my enrolled employees adhere to a monthly schedule in completing and returning assignments for scoring so that they will receive the maximum benefit from this Home Study Program.

*(N.A.A. Members $50 per enrolled employee)

Name _____

Company _____

Street or P.O. Address _____

City _____ State _____ Zip _____

Signature _____ Title _____ Date _____

Note: Please type or print information. Make checks payable to NATIONAL ARBORIST ASSOCIATION.

home study program in arboriculture

series I

national arborist association

This brochure is designed to provide you with a brief introduction to Series I of the National Arborist Association Home Study Program (HSP), one of the most valuable educational tools available within the arboricultural field today.

Course Objectives

The Home Study Program is constructed so as to offer professional arborists and their staff members a highly effective, yet economical means of acquiring valuable technical and professional expertise.

Used properly it will enable your organization to attain levels of greater efficiency and increased productivity, resulting in greater profits for *you.*

In the past, one of the biggest problem areas that existed within the industry has been one of employee education and development. NAA's Home Study Program is intended to alleviate that critical situation by improving the quality, dedication and professionalism of your staff. It has been estimated that it costs you, the employer, $10,000 to replace a man and properly *train* his replacement.

Course Operation

Each section of the program contains its own testing facilities, which utilize objective question-and-answer techniques. Upon completion of an individual session, the enrollee submits his test packet to the NAA office for scoring, and upon receipt of results proceeds to the next assignment. The course may be administered on a non-scoring basis in situations where the HSP is used for purposes of reference material.

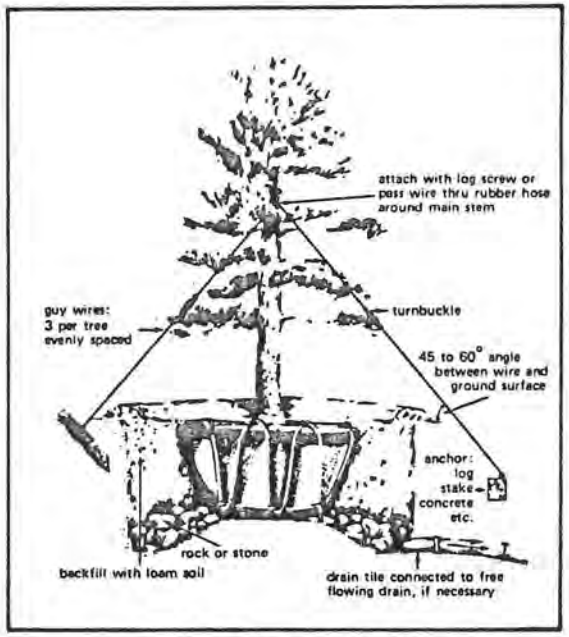
Since each complete eight-session program is mailed intact to every participating organization, the pace at which the course is administered shall become the employer's prerogative. Every HSP kit includes:

a. Eight sessions
b. Test questions
c. Score sheets
d. Instructional information
e. Return envelopes
f. Binder

Contents

The HSP represents a major work in the arboricultural field, consisting of more than 400 pages. The course is comprised of eight individual assignments, and enrollees are used to complete at least one session per month. Assignment subjects include:

1. General Introduction to Commercial Arboriculture
2. Anatomy and Physiology of Trees
3. Soils
4. Pruning of Shade and Ornamental Trees, Part I
5. Pruning of Shade and Ornamental Trees, Part II
6. Identification and Selection of Trees
7. Transplanting Shade and Ornamental Trees
8. Fertilizing and Watering Shade and Ornamental Trees



SAMPLE ILLUSTRATION

Cost

Enrollment fees for the HSP program are $75.00 per individual enrollee.

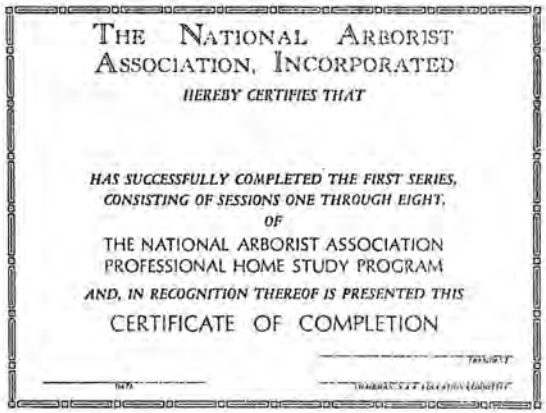
(N.A.A. Members $50 per enrolled employee)

Course Details

The material contained in the Home Study Program was compiled by Drs. J. James Kielbaso and Melvin Koelling, faculty members of Michigan State University's Department of Forestry and Horticulture.

The program has enjoyed wide acceptance since its origination, and presently carries an enrollment of over 250 persons from NAA firms alone. Through many months of practical experience and exposure, the course has continuously evolved and improved.

The second series of the Home Study Program will serve as a more advanced learning forum for Series I program graduates. Upon successful completion of the HSP, each enrollee will be awarded a diploma, attesting to his culmination of the course, and each employer will be similarly notified.


THE NATIONAL ARBORIST ASSOCIATION, INCORPORATED

HEREBY CERTIFIES THAT

HAS SUCCESSFULLY COMPLETED THE FIRST SERIES, CONSISTING OF SESSIONS ONE THROUGH EIGHT, OF

THE NATIONAL ARBORIST ASSOCIATION PROFESSIONAL HOME STUDY PROGRAM

AND, IN RECOGNITION THEREOF IS PRESENTED THIS

CERTIFICATE OF COMPLETION

Can You Afford...To Decline?

The NAA has administered the Home Study Program to achieve specific objectives, and to intensify the professionalism of its members. Through the Home Study Program you may accomplish these same aims.

. . . We strongly urge you to take advantage of this opportunity by enrolling as many of your staff personnel as possible. Fill out the attached enrollment form and return it with your remittance today.

ENROLLMENT FORM

NATIONAL ARBORIST ASSOCIATION PROFESSIONAL HOME STUDY PROGRAM

National Arborist Association
3537 Stratford Road
Wantagh, N.Y. 11793

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I enclose check for $_____ *($75 per enrolled employee) to cover total costs (exclusive of return postage) of the series of eight sessions. I understand that this payment is *not* refundable. I will endeavor to assure that my enrolled employees adhere to a monthly schedule in completing and returning assignments for scoring so that they will receive the maximum benefit from this Home Study Program.

*(N.A.A. Members $50 per enrolled employee)

Name _____

Company _____

Street or P.O. Address _____

City _____ State _____ Zip _____

Signature _____ Title _____ Date _____

Note: Please type or print information. Make checks payable to NATIONAL ARBORIST ASSOCIATION.

home study program in arboriculture

series II

national arborist association

Continued education is of prime importance to every professional, regardless of his field. This brochure is designed to provide you with a brief introduction to Series II of the National Arborist Association Home Study Program (HSP), a continuation of Series I.

Course Objectives

Series II of the Home Study Program is constructed so as to continue your education in even more areas of arboriculture than Series I. Professional arborists and their staff now have an opportunity to complete their education in arboriculture with new, detailed instruction. This is one of the most effective, economical means of acquiring valuable technical and professional expertise.

Used properly, Series II will enable your organization to attain even greater efficiency and increased productivity, resulting in greater profits for you.

Series II is a must for any arborists who have completed Series I of the Home Study Program. Don't stop your education when it is only half completed. The more your people know about their jobs means increased efficiency and effectiveness. NAA's Home Study Program is intended to alleviate the critical employee education problem by improving the quality, dedication and professionalism of your staff. Continuing employee education will ensure you maximum productivity with a minimum of supervision for each of your men.

Course Operation

Each section of the program contains its own testing facilities, which utilize objective question-and-answer techniques. Upon completion of an individual session, the enrollee submits his test packet to the NAA office for scoring, and upon receipt of results proceeds to the next assignment. The course may be administered on a non-scoring basis in situations where the HSP is used for purposes of reference material.

Since each complete eight-session program is mailed intact to every participating organization, the pace at which the course is administered shall become the employer's prerogative. Every HSP kit includes:

a. Eight sessions
b. Test questions
c. Score sheets
d. Instructional information
e. Return envelopes
f. Binder

Contents

Series II represents a major work in the arboricultural field, consisting of more than 400 pages. The course is comprised of eight individual assignments, and enrollees are urged to complete at least one session per month. Assignment subjects include:

9. Diagnosis of Shade and Ornamental Tree Problems
10. Non-Parasitic Injuries of Shade and Ornamental Trees
11. Insect Problems of Shade and Ornamental Trees
12. Disease Problems of Shade and Ornamental Trees
13. Spraying Techniques for Shade and Ornamental Trees
14. Pollution Damage to Trees and Ornamental Plants
15. Maintenance and Repair Practices for Shade and Ornamental Trees
16. Safety Practices for Workers in Shade and Ornamental Trees

Cost

Enrollment fees for the HSP program are $75.00 per individual enrollee.

(N.A.A. Members $50 per enrolled employee)

Course Details

The material contained in Series II of the Home Study Program was compiled by Drs. J. James Kielbaso and Melvin Koelling, faculty members of Michigan State University's Department of Forestry and Horticulture and Dr. Spencer H. Davis, Jr., faculty member of Rutgers University's Department of Plant Pathology.

The NAA Home Study Program has enjoyed wide acceptance since its origination, and presently carries an enrollment of over 250 persons from NAA firms alone. Through many months of practical experience and exposure, the course has continuously evolved and improved.

Offered in its entirety for the first time in August 1972, the Series II HSP is the newest addition to the program serving as a more advanced learning forum for Series I Program graduates. Upon successful completion of the HSP, each enrollee will be awarded a diploma, attesting to his culmination of the course, and each employer will be similarly notified.

THE NATIONAL ARBORIST ASSOCIATION, INCORPORATED

HEREBY CERTIFIES THAT

HAS SUCCESSFULLY COMPLETED THE SECOND SERIES, CONSISTING OF SESSIONS NINE THROUGH SIXTEEN OF

THE NATIONAL ARBORIST ASSOCIATION PROFESSIONAL HOME STUDY PROGRAM

AND, IN RECOGNITION THEREOF IS PRESENTED THIS

CERTIFICATE OF COMPLETION

Can You Afford...To Decline?

The NAA has administered the Home Study Program to achieve specific objectives, and to intensify the professionalism of its members. Through the Home Study Program you may accomplish these same aims.

. . . We strongly urge you to take advantage of this opportunity by enrolling as many of your staff personnel as possible. Fill out the attached enrollment form and return it with your remittance today.

PLANTING,
FERTILIZING AND SOILS
LESSONS 1, 2 & 3

Humber College of Applied Arts and Technology

Arborist Journeyman Extension Programme

ARBORIST JOURNEYMAN EXTENSION PROGRAMME

HUMBER COLLEGE OF APPLIED ARTS AND TECHNOLOGY

Humber College Boulevard, Rexdale, Ontario 416/677-6810

COURSE: SOILS, FERTILIZERS AND PLANTING

LESSON 1: Introduction to Soil

OBJECTIVES:

1. To introduce some of the common terms and concepts essential to a basic study of soil science.

2. To consider the basic components of most soils and the importance of each component.

ARBORIST JOURNEYMAN EXTENSION PROGRAMME

HUMBER COLLEGE OF APPLIED ARTS AND TECHNOLOGY

Humber College Boulevard, Rexdale, Ontario 416/677-6810

COURSE: SOILS, FERTILIZERS AND PLANTING

LESSON 2: SOIL FORMATION

OBJECTIVES:

1. To study the general factors effecting soil formation and development.
2. To understand the major reasons for the regional and local variation of soil characteristics.
3. To introduce some of the factors that modify soil types, cause erosion and change or reduce soil fertility.
4. To learn to estimate the type of soil present from shallow bedrock, soil contour and natural vegetation.

ARBORIST JOURNEYMAN EXTENSION PROGRAMME

HUMBER COLLEGE OF APPLIED ARTS AND TECHNOLOGY

Humber College Boulevard, Rexdale, Ontario 416/677-6810

COURSE: Soils, Fertilizers and Planting

LESSON 3: Physical Characteristics of Soil

OBJECTIVES:

1. To appreciate the wide ranging effects of the physical condition of soil and relationships to plants.
2. To study soil water retention leaching and availability in various types and conditions of soil.
3. To understand the value of organic matter to a "healthy" fertile soil.
4. To appreciate the importance of proper soil texture, porosity and structure and the agricultural means of maintaining optimum physical characteristics.

APPENDIX 59.

Topics generated for Review of Boulevard Tree Management Procedures

CONCERNS LIST PROCEDURES

Manuals

Procedures Manual

Specifications Manual

Safety Manuals

Operating Manuals

Equipment Manuals

Design Manuals

Organization Manuals

SPECIFICATIONS
(See Practices Section)
Lists

Inventories

Profiles
Historical
Property

Plans

Management

Replacement

Long-range

Records

Policy Implementation

Legal Obligations

Safety

Permitting and Licencing

Liabilities

Property Damage

Bodily Injury

Insurance

Communications

Relations with Federal Government
Relations with Provincial Government
Public documents
Traffic group and vision
VanDusen Gardens and training
Utility conflicts
Trees in lanes
Engineering Branch general
Planning general
Neighbourhood Improvement Programs general
Sewers general
Curbs
Road Crossings
Fire Service
Lighting

Responsibilities

Tree Farm
Arborist Licencing
Program Execution
Timing and staging

Decision-making Process

Budgets
Dollars for staff salaries
Resources Library
Program - general
Financial control
Productivity
Workload

Staffing
Staff training
Staff numbers
Staff evaluation
True productivity
Workers' Compensation Board
Presentation and codes of conduct

Direct Services
Purchasing
Data control
Records

Support Services

Training

Tree Farm

Publication education

Support Services Required

Purchasing

Contracting

Payroll

Union negotiations

Public Relations

Arbor Days

School system education

Property damage

Public reporting

Resource Design

Health in terms of allergies

Poisonous plants

Undesirable trees

Neighbourhood Improvement Programs

Beautification Programs

Base Plantings

Containers

Replacement Programs

Width of Planting Strips

Choice of trees - general

Tree Farm

Size of stock
Research needs
Program constraints
Curbs
Road Crossings
Districting Policies

Resource Assessment

Workload
Diagnostic Techniques
Nutrient deficiencies
Unsafe trees
Future problems

Resource Management

Heritage Trees
Vandalism
Root problems
Fruitfall
Entomology
Pathology
Bird pests
Namalian pests
Replacement programs
Tree topping and pruning
Policing and enforcement
Prosecution
Utility conflicts
Supply of trees
Sewer conflicts

Property damage
Overhanging branches
Establishment procedures
Planting, watering, etc.
Tree surgery procedures
Planting pits.

DRAFT CONCERNS - PRACTICES

MEN

Workers' Compensation Board Safety Requirements

METHODS

Planning

Nursery Practice
Choice of species
Transportation

Establishment

Protection from disease
Protection from insects
Base plantings
Containers
Width of planting strips
Size of stock
Curbs
Tree guards
Tree staking
Ground preparation
Tree pits
Planting methods
Pavement holes

Maintenance

Air pollution
Insect problems
Disease problems
Traffic hazards
Obscuring of vision
Vandalism
Containers
Drains plugging
Lighting vs. trees
Overhanging branches
Tree fertilizing
Tree topping
Tree pruning
Watering
Bird control
Pollarding
Pruning for view
Root control
Basal spraying
Bracing
Tree surgery
Wound repair

Diagnosis

Trace elements
Insects
Disease
Abiotic effects
Chlorosis

Removal

Large tree takedown
Stumping

Replacement
Traffic interference
Hazardous trees
Pavement crossings
Utilities
Temporary planting

Utilization
Chipping
Planting
Log sales

Materials
Growth regulators
Anti-transpirents
Pesticides
Bird control chemicals
Wound dresssings
Fertilizers

Machinery
Power saws
Chippers
Hand tools
Aerial bucket devices

Diagnostic Equipment
Cabling and guying equipment

APPENDIX 60.

Suggested Priority Maintenance
Streets in the City of Vancouver

Georgia from Lagoon Drive to Beatty

Denman from Georgia to Beach

Beach from Denman to Pacific

Pacific from Beach to Burrard

Burrard from Hastings to Broadway

Granville from Cordova to S.W. Marine Drive

Cornwall from Burrard to Point Grey Road

Point Grey Road from Cornwall to Alma

Alma from Point Grey Road to the Dunbar Diversion

Dunbar from Dunbar Diversion to S. W. Marine Drive

S. W. Marine Drive from Camosun to Boundary

Tenth from Blanca to Alma

Broadway from Alma to Boundary

Main from Alexander to Broadway

Powell from Columbia to Wall

Wall from Powell to McGill

McGill from Wall to Nootka

Renfrew from McGill to Hastings

Hastings from Georgia to Boundary

Terminal Way from Main to First

First from Terminal Way to Boundary

Kingsway from Main to Boundary

Knight from Kingsway to S. E. Marine Drive

Cambie from Beatty to 37th.

37th from Granville to Main

33rd from Granville to Cambie

The area surrounding City Hall - Cambie, 12th, Yukon, 10th, etc.

All streets bounded by Mainland/Beatty, Pender/Main and Pacific and Hastings/Cordova/Water Streets and Denman except

Harwood from Bidwell to Burrard

Burnaby from Bidwell to Burrard

Pendrell from Denman to Burrard

Comox from Denman to Burrard

Nelson from Denman to Burrard

Barclay from Denman to Burrard

Haro from Denman to Burrard

Gilford from Beach to Robson

Chilco from Beach to Robson

APPENDIX 61

Suggested High Maintenance
Streets in the City of
Vancouver

Main from Broadway to 41st

41st from Dunbar to Kingsway

2nd from Main to Cambie

6th from Cambie to 4th

4th from 6th to Discovery

2nd from Discovery to Sasamat

Sasamat from 2nd to N.W. Marine Drive

N.W. Marine Drive from Sasamat to the University Endowment Lands

Harwood from Bidwell to Burrard

Burnaby from Bidwell to Burrard

Pendrell from Denman to Burrard

Comox from Denman to Burrard

Nelson from Denman to Burrard

Barclay from Denman to Burrard

Haro from Denman to Burrard

Gilford from Beach to Robson

Chilco from Beach to Robson

All Mini Park Trees

All other beautification areas

Any other areas as determined by the Park Board

APPENDIX 62.

List of Present Operating Accounts

ACCOUNTS RECEIVABLE (90 Accounts 33 + 10%)

90-001 B. C. Hydro
90-017 City Eng. Tree Trimming
90-037 Downtown Tree Planting
90-051 B. C. Telephone pruning
90-061 Top Soil Recoverables
90-087 Flat Rate Tree Removal
90-088 Granville Mall Planters & Planting
90-090 City Eng. Street Tree Planting
90-200 Miscellaneous Accounts
90-315 Strathcona Tree Planting
90-316 Strathcona Tree Planting - Prior & Campbell
90-360 City Eng. West End Mini Parks
90-405 West Broadway Planters
90-408 N.I.P. John Hendry-Cedar Cottage
90-425 Street Trees-Powell, Dunlevy, Jackson, Cordova
90-436 N.I.P. Restore Commercial Findlay to Victoria Drive
90-442 N.I.P. Kitsilano Tree Planting
90-445 West Broadway Planters, Maint.
90-446 West Broadway Street Tree Maint.
90-448 City Eng. Streets Capital Acct.
90-478 Chinatown Beaut. Purchase of trees
90-479 Chinatown Beaut. Soil & Planting
90-480 Maple Tree Square
90-481 Kerrisdale 41st & Arbutus
90-482 Hastings St. - Carral to Cambie
90-483 Water Street
90-484 Granville Mall

MAINTENANCE OF CITY PROPERTIES (30 Accounts 28 + 10%)

30-580 Street Tree Root Prune
30-590 Street Tree Purchases
30-591 Centre Blvds
30-593 Street Tree Maintenance
30-595 Street Lighting
30-605

CAPITAL PROJECTS RECOVERABLE

61-090 Tree Planting Commercial 14th to 15th
61-100 Tree Planting Kingsway Knight to Nanaimo

THIRD FIGURE CODES

001 Salaries Regular
002 Salaries Overtime
004 Wages Regular
005 Wages Overtime
018 Plants, Shrubs and Trees
020 Horticultural Supplies-Seed Fertilizer, Trees, Stakes, Sprays, etc.
027 Small tools and Equipment, Rope
029 Equipment - Oper. supplies, gas, oil, etc.
061 Truck and Equipment Charges, City Vehicles
062 Vehicles and Equipment Rental
063 Downtime

APPENDIX 63.

Example Job Descriptions for City Staff employed in Arboricultural Operations

City of Vancouver
Class Specification

Class No. 818
Est. Nov., 1960

ARBORIST

1. Nature and Scope of Work

This is skilled specialized work involved in the culture, artistic planning and pruning of ornamental boulevard trees. An employee of this class is responsible for planting, trimming, treating, spraying and removal of boulevard trees and supervises one or more assistants engaged in related but less skilled tasks. In maintaining and planning an effective boulevard tree program, an Arborist exercises considerable independence of judgement and refers difficult problems or policy matters to a superior who checks the work for the attainment of desired objectives.

2. Illustrative Examples of Work

Lays out, selects, plants, transplants, feeds, prunes, sprays, removes boulevard trees and plans an ornamental boulevard tree program.
Supervises one or more subordinates engaged in related but less skilled arboricultural tasks.
Deals with requests and complaints from the public related to boulevard tree planting, pruning and maintenance and removal.
Compiles and maintains charts and files and performs surveys related to the work.
Ensures for safeguards and precautions to prevent injury to the public and workmen or damage to civic or private property.
Performs related work as required.

3. Required Knowledges, Abilities and Skills

Thorough knowledge of the methods, practices, tools and equipment used in arboricultural work.
Good knowledge of tree diseases and pests and treatment methods.
Good knowledge of the occupational hazards and safety precautions related to the work.
Ability to assign, check and review the work of one or more subordinates engaged in semi-skilled arboricultural tasks.
Ability to establish and maintain effective work relationships with the public and to process a variety of questions and requests related to the work.
Ability to prepare and maintain charts and files, undertake surveys related to the work and identify trees as to species and variety.
Skill in the use and care of tools and equipment used in the work.

4. Desirable Training and Experience

Completion of the tenth school grade and completion of an apprenticeship in Horticulture. Considerable experience in boulevard tree planning and maintenance work or an equivalent combination of training and experience.

5. Required Licenses, Certificates and Registrations

Driver's license for the Province of British Columbia.

City of Vancouver
Class Specification

Class No. 818
Est. Nov., 1960

ARBORIST now Fore / Mar/63

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Ensures for safeguards and precautions to prevent injury to the public and workmen or damage to civic or private property.
Performs related work as required.

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Completion of the tenth school grade and completion of an apprenticeship in Horticulture. Considerable experience in boulevard tree planning and maintenance work or an equivalent combination of training and experience.

5. Required Licenses, Certificates and Registrations

Driver's license for the Province of British Columbia.

CITY OF GLASGOW DISTRICT COUNCIL

PARKS DEPARTMENT

ASSISTANT DIRECTOR

Salary Scale: £7977-£8559*

Glasgow Parks Department, with a work force exceeding 1600 employees has a considerable commitment in its responsibility for the management of the City's sporting, recreational and landscaped facilities which include over 70 parks, many of which are known throughout the world. In addition we are currently involved in large programmes of development work which include several major new Parks designed to meet modern needs especially for young people, and extensive programmes of environmental improvement works to derelict and underdeveloped areas. Rechargeable work is also done for the District and the Regional Councils.

We are looking for an Officer having considerable management skills and experience, capable of taking responsibility for the efficient day to day operation of the Department's routine layout and maintenance work to parks, sport and play facilities, school grounds, road landscaping etc. He/she will also be involved in planning for the management and staffing of our new facilities presently under construction and for assisting in the management of our large scale job creation projects. In addition to the above range of management responsibilities the postholder will be expected to make a positive contribution to the corporate thinking and activities of the Department.

* Including Supplement

Superannuation, sick pay and staff life assurance schemes in operation. Removal expenses, legal fees and lodging and subsistence allowances payable in appropriate cases. Appointment subject to medical fitness. Local authority salary and conditions apply.

Application forms available from the Director of Parks, 20 Trongate, Glasgow G1 5ES (Tel: 041-552 7941 Ext. 37) to be completed and returned by 22nd February 1979.

Please quote ref: 2/79.

Metropolitan Borough of

WIRRAL

RANGER—£3279-£3732

EASTHAM WOODS COUNTRY PARK

This is an interesting post involving the management and conservation of the park plus the provision of information and other assistance to visitors. Tenancy of a house situated within the park is offered with the post.

Application forms from Director of Leisure Services, 6 Riversdale Road, West Kirby, Wirral, Merseyside (051-625 9441 ext 62) returnable by 2 February.

ARBORICULTURAL SUPERVISOR

£4,245-£4,638 **Ref: 1891**

A vacancy has arisen in the Forestry Section for the above post. The section has an establishment of 30, and maintains within this establishment a tree surgery unit of three members. The Aboricultural Supervisor will lead, supervise and train this team.

In addition, a large proportion of the job is to undertake tree surveys for the Forestry Officer, Landscape Architects and Planners, and to undertake protection and survey work on trees on development sites. It is expected that the successful applicant will hold the Certificate of Arboriculture and possibly the Diploma of Arboriculture. A current U.K. driving licence is essential.

The Corporation's conditions of service are attractive and include assistance with housing, full removal costs, legal and agents' expenses on sale and purchase of housing, settling-in allowance of up to £200, generous separation allowance for up to four months, free life assurance, choice of superannuation schemes, 24½ days annual leave plus 2½ days Corporation holiday.

Detailed applications, quoting the reference number and job title, should be sent to the Personnel Manager by not later than 11th February.

Milton Keynes
Development Corporation
Wavendon Tower Wavendon
Milton Keynes MK17 8LX

SOCIAL SERVICES DEPARTMENT

GARDENING INSTRUCTOR

Senior Training Centre, Mitcham, Surrey

We are looking for a second instructor to develop gardening/horticultural work at our centre for the mentally handicapped. The applicant should preferably possess the Diploma in Training and Further Education of Mentally Handicapped or equivalent. The person appointed would supervise groups of up to 15 trainees and assist with their assessment and general welfare. Some experience of landscape and general purpose gardening would be advantageous.

Gardening is one of a variety of activities which forms an integral part of the work of the Centre whose overall objective is to provide a comprehensive training programme for the individual, so designed as to maximise the mentally handicapped person's development towards a goal of independent living.

Salary: £3,180-£4,116. Application forms available from:

Director of Social Services
116 Kingston Road, SW19
Tel: 01-540 8322, ext 211

LONDON BOROUGH OF

merton

LONDON BOROUGH OF HARROW

Work on the fringe of Greater London

As a result of restructuring in the Department of Development and Technical Services of the London Borough of Harrow an opportunity has been taken to set up a new team of officers under an Amenities Manager to co-ordinate design, implementation and management of landscape, parks and horticulture activities applicable to the borough as a whole.

Harrow is well endowed with a fine heritage of trees and private and public open spaces and playing fields.

Arboriculturist up to £3600

Plus £254 car allowance.

Person suitably qualified—diploma in Arboriculture preferred—responsible for advice and control of arboriculture work in the landscape group. Knowledge of tree preservation essential, a significant percentage of time would be related to the work of the planning division.

Reasonable removable expenses reimbursed, lodging allowance of up to £6 per week and up to £500 towards legal and estates agents fees may be payable.

If you wish to learn more about this post ring Jessica Ashdown 01-863 5611 extension 2442.

Salaries subject to formal approval.

Application form and details of the Department from Personnel Manager, London Borough of Harrow, P.O. Box 57, Civic Centre, Harrow, HA1 2XF, returnable within 14 days.

Twenty-four hour ansafone service: 01 863 8270.

Classified Advertisements

Wholesale and Trade Advertising appears in the Trade Market Place (yellow pages). All classified advertisements in this section (white pages) should be addressed to Jenny King, G.C. & H.T.J., Classified Advertisements Dept., 5th Floor, Regent House, Regent Street, London, W1A 4YJ, telephone no. 01-439 4242, extn. 49.

Appointments-Public and Municipal

Northampton Borough Council
Leisure and Recreation Department

Landscape Arboricultural Assistant

AP3—£3,732—£4,146 per annum
(inclusive of supplement)

To be responsible for the provision of landscaping advice, designing tree planting schemes and advising on all aspects of arboricultural work.

Duties will include assisting with landscape work, land measurement and basic surveying, recording of land acquisitions, tree inspections, preparation of tree preservation orders, specifications for tree planting and maintenance work, and giving general advice to the public.

Applicants should hold a certificate or a Degree/Diploma in Arboriculture/Forestry, or equivalent.

Starting salary will be commensurate with qualifications and experience.

Temporary lodging or travelling allowance; disturbance allowance; assistance with removal expenses and estate agents/solicitors fees in approved cases.

Housing accommodation may be available.

Application forms and further details are available from the Chief Executive (Personnel) Northampton Borough Council, 61 Derngate, Northampton NN1 1UW. Telephone Northampton 34881 ext. 583

Completed forms to be returned not later than 17 February, 1979

NATIONAL INSTITUTE OF MEDICAL RESEARCH

ESTATE FOREMAN

We require and Estate Foreman to supervise the Estate Section of the Building Services Division. Duties will include the maintenance of a site approximately 50 acres in size, with the help of a staff of four including a tractor driver. He will also be responsible for the upkeep of a small greenhouse, sports facilities (including football and cricket pitches), animal grazing areas, fencing, ditches, lawns, and laid out gardens.

Preferably applicants should have experience in a similar position with suitable background and training. The salary is £54.80 per week inclusive and accommodation is available on the Institute's estate. Working conditions are excellent and the Institute is situated in very pleasant surroundings.

Please contact Mrs P. A. Wilde, Personnel Officer, for an application form at NIMR, The Ridgeway, Mill Hill NW7 1AA or telephone her secretary on 01-959 3666 extension 218 or 221.

NORTH YORKSHIRE COUNTY COUNCIL
Architects Department

Applications are invited for the following post:

PLAYING FIELD TECHNICIAN

Salary Grade T4 £4,245-£4,632 Inclusive of supplement

Applicants for this post must be suitably qualified by having the National Certificate in Horticulture or the City & Guilds Amenity Horticulture Stage III, and be experienced in the maintenance and design of playing fields, grounds and in the supervision of grounds staff.

Full removal expenses and assistance with legal, resettlement and lodging expenses will be given in appropriate cases.

A car is necessary for this post.

Application forms obtainable from the **County Architect, Staff Precinct, East Road, Northallerton,** to whom completed applications should be returned by February 17, 1979.

CORNWALL AND ISLES OF SCILLY AREA
HEALTH AUTHORITY
AREA WORKS DEPARTMENT

HEAD GARDENER

ST LAWRENCE'S HOSPITAL
BODMIN

Applicants should have a broad knowledge of modern gardening techniques and economical maintenance of grounds, plus experience in the management and training of staff.

Housing accommodation available if required.

Basic wage £42.04 per 40 hour week. Incentive bonus payment (20% of £42.04=£8.41) plus non-enhanceable addition of £7.20 per week. Annual pay award pending.

Application form and Job Description from the Area Works Department, 4 St Clement Vean, Truro, TR1 1NR. Telephone: Truro 74433 ext. 237.

Closing date for completed applications—23rd February, 1979.

Runcorn New Town

WOODLANDS AND OPEN SPACES DEPARTMENT

TECHNICAL FORESTRY ASSISTANT

New Town Grade V—£4,245-£4,638 per annum inclusive

An experienced and qualified Arboriculturist/Forester is required to join a successful integrated team involved in all types of modern landscape maintenance and direct works. Duties will include the management and maintenance of woodlands and the organisation and control of all tree surgery work in the New Town area.

Applicants should have five years experience in the supervision, control and training of all personnel employed in the above operations, together with experience of management plans and tree surveys.

A Royal Forestry Society Diploma or Certificate in Arboriculture or Forestry is required.

A current driving licence is essential.

Superannuation and sick pay schemes are in operation and assistance with removal expenses, house purchase fees and lodging allowances are payable in appropriate cases. Housing is available for rent if required.

Application forms and further information are obtainable from: The Woolands and Open Spaces Manager, Runcorn Development Corporation, Chapel Street, Runcorn, Cheshire WA7 5AR. Telephone Runcorn 73477 and should be returned no later than 23rd February 1979.

CROWN ESTATE COMMISSIONERS

There are Vacancies for

Groundsman/Woman
in Windsor Great Park

Duties involve maintenance of a Bowling Green, Cricket Pitch, Football Pitch, Putting Green, Hard Tennis Court.
Applicants must be prepared to work overtime. Pay for Basic 40 hour week £51.05 plus £3.50 bonus. Non contributory pension scheme. Rented accommodation available.

Gardeners and Parks Workers
in Windsor Great and Home Parks

Pay for Basic 40 hour week £48.55 to £51.05 according to experience, plus £3.50 bonus.
Non contributory pension scheme. Rented accommodation available.

Applications for the above posts in writing only, detailing age, qualifications and experience and post applied for to:

The Deputy Ranger,
Crown Estate Office,
Windsor Great Park, Windsor

London Borough of Wandsworth

Senior Keeper
(Tooting Common)
Total approx £75 per week (inc overtime etc)
To be responsible for the cleanliness of the Common, and for Patrol/Keeper duties connected with public use. Must be able to supervise six staff and deal with the public. forty-hour week worked on shift basis including weekends and early/late turns. Some overtime available. To apply, send sae to Personnel Section, Recreation Dept, Battersea Town Hall, London SW11, quoting ref: 485. Closes February 12.

Keeper
(Tooting Common)
Total approx £70 per week (inc overtime etc)
To be responsible to Senior Keepers for the cleanliness of the Common. Must be able to deal with, and advise, the public as required. Forty-hour week worked on shift basis, including weekends and late/early turns. To apply, send sae to Personnel Section, Recreation Dept, Battersea Town Hall, London SW11, quoting ref: 486. Closes February 12.

Horticultural Trainees
£49.97 per week at age 18
For Parks Division, working on the Council's horticultural schemes. Entails landscape construction, and site supervision. Applicants should have a keen interest in horticulture and preferably a knowledge of draught draughting. Training given in all aspects of park work. To apply, send sae to Personnel Section, Recreation Dept, Battersea Town Hall, London SW11, quoting ref: 487. Closes February 12.

CYNGOR DOSBARTH
CEREDIGION DISTRICT COUNCIL
TECHNICAL SERVICES DEPARTMENT

GROUNDSMAN/GARDENER (2 posts)

Group E-G: £47.30-£49.75 pw (inclusive of supplements) subject to qualifications. Pay awards pending.

Post (a) Aberystwyth; post (b) Tregaron. Suitably qualified men or women required in Parks, Gardens Section, preferably with experience in maintenance of bowling and putting greens and football pitches, as well as of general amenity horticulture. Help with housing may be available.

Details and application forms from:
Personnel Officer
Town Hall, Aberystwyth, Dyfed
Tel: 0970 61791
Closing date for applications February 15, 1979.

BISHOP BURTON COLLEGE OF AGRICULTURE

GLASSHOUSE TECHNICIAN

Applications are invited from suitably qualified and experienced persons in commercial glasshouse crop production, to be responsible for the day-to-day operation and management of a ½ acre glasshouse unit and capable of demonstrating to students specialised horticultural skills. The post is available from March 1st 1979.

Salary scale: A.P.T. Scale miscellaneous Grade 5, £2,775—£2,967 + £312 supplement for a 40 hour week with additional pay for weekend duty and overtime as required.

Applications, giving details of experience and the names of two persons to whom reference may be made, should reach The Principal, Bishop Burton College of Agriculture, Bishop Burton, Beverley, North Humberside, as soon as possible.

CUCKFIELD and CRAWLEY HEALTH DISTRICT

GARDENER

required Male/Female. Based at Roffey Park Hospital, Horsham, to help maintain grounds at Roffey Park and other Hospitals and Clinics in the Horsham area. Driving licence desirable. Wages according to experience. Single accommodation may be available. Application form from District Works Office, St Francis Hospital, Colwell Road, Haywards Heath, W. Sussex RH16 4EZ. Tel: H. Heath 57411/2. Closing date 9th February, 1979.

Classified Advertisements

Wholesale and Trade Advertising appears in the Trade Market Place (yellow pages). All classified advertisements in this section (white pages) should be addressed to Jenny King, G.C. & H.T.J., Classified Advertisements Dept., 5th Floor, Regent House, Regent Street, London, W1A 4YJ, telephone no. 01-439 4242, extn. 49.

Appointments-Public and Municipal

Borough of Reigate & Banstead

Area Parks Officer

Grade AP5/SO.1- £4,953-£5,748 inclusive

Applications are invited for the above post from suitably qualified persons who will be responsible to the Assistant Technical Officer (Services) or his assistant for the day-to-day organisation of the Northern Area of the Borough, which includes recreation grounds, commons, woodlands, grass verges, allotments and amenity areas.

Incentive Bonus Scheme for manual workers is in operation. Essential user car allowance, housing accommodation and relocation assistance.

Arboricultural Officer

Grade AP4/5—£4,425-£5,253 inclusive

To be responsible for all matters appertaining to tree works, tree inspections and keeping of records, organisation of the Council's direct labour force engaged on tree works, dealing with contractors and assisting other Council departments when required. Preference will be given to holders of the NDA or other recognised qualifications.

Essential user car allowance. Housing accommodation may be available in appropriate cases.

Both posts are open to men and women, and are in the Technical Services department.

Application forms, Ref 155 and 159, available from the Personnel Officer, Town Hall, Castlefield Road, Reigate, Surrey. Telephone: Reigate 42477 extn. 104. Closing date: February 22, 1979.

NAPSBURY HOSPITAL

nr St Albans, Herts

EXPERIENCED GARDENER

(Male or female)

for general maintenance of ornamental grounds of the hospital. Married accommodation available. £54.45 per 40 hour week, including bonus.

Application form from Personnel Assistant, Bowmansgreen 23333.

KENT COUNTY COUNCIL

ESTATES & VALUATION DEPARTMENT

LANDSCAPE TECHNICAL ASSISTANTS

£3732-£4632 (inclusive)

for a variety of management and design work.

Two are required, one will be mainly concerned with the upkeep of gardens, school playing fields and other open spaces and will need a good horticultural knowledge, particularly in relation to trees, shrubs and turf culture. The post will offer opportunities for experience in the supervision and management of direct labour and contract work. Applicants should preferably have a degree in Horticulture or NDH but an HND or Diploma of the IPRA considered.

The other post will be primarily concerned with the design and layout of new open spaces and will need good landscape design and drawing ability (to Landscape Institute Part III or equivalent).

Both posts are suitable for recently qualified persons who are seeking experience in a large department covering a wide range of landscape work.

Further details and application form for both posts returnable by 2 March from The County Estates Officer & Valuer, Springfield, Maidstone.

WARWICKSHIRE COLLEGE OF AGRICULTURE

HORTICULTURAL TECHNICIAN

Applications are invited for the post of Technician based at the Horticultural Unit, South Warwickshire College of Further Education, Stratford-upon-Avon.

Salary on Scale for Technicians grade T1C, commencing £2,676 and rising by three increments to £2,967 plus £312 per annum supplement.

Application forms and further details available from the Principal, Moreton Morrell, Warwick.

STAFFORDSHIRE EDUCATION COMMITTEE

Staffordshire College of Agriculture

Lecturer 1A Horticulture/ Arboriculture and Assistant Warden

£3192-£5334 including supplements.

Application forms and further details are available from the Principal, Staffordshire College of Agriculture, Rodbaston, Penkridge, Staffs.

Previous applicants need not re-apply.

Classified Advertisements

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Appointments-Public and Municipal

Assistant Technical Officer

(Male/female)
£3,399—£5,688 pa

Required to work as a member of a technical team in a busy Parks, Cemeteries and Allotments Division. Candidates should be experienced in this type of work and qualified to at least the intermediate level of an appropriate professional institute.

Housing accommodation will be available for the successful applicant.

Application forms available from the Personnel Manager, Council Offices, Whitehall Lane, Grays (Telephone No. Grays Thurrock 5122 Ext. 149), returnable by 29 August 1978. Please quote post No 5/59.

Thurrock
Borough Council

AMENITIES AND RECREATION DEPARTMENT

Technical Assistant

£3,279-£4,146 (Inclusive of Supplement)

Responsible to the Senior Technical Assistant for preparing plans and designing horticultural features for environmental improvements, land reclamation, landscaping, drainage, construction of recreation grounds and playing fields, and the various other projects with which the Amenities and Recreation Department is concerned.

Preference will be given to holders of the Intermediate examination of the National Diploma in Horticulture or its equivalent who are studying or prepared to study for the Intermediate examination of the Institute of Park and Recreation Administration. Drawing office experience would be an additional advantage.

Application forms from the Establishment Officer, Town Hall, Barnsley. Closing date 25th August, 1978.

BARNSLEY
Metropolitan Borough Council

ARBORISTS

(Ref: P103)

Five skilled Arborists are required for an expanding tree surgery and maintenance unit. Applicants should be capable of working at heights and be able to use and maintain chain saws and other mechanical equipment.

Qualifications and driving licence would be an advantage.

We work a 40 hour week—Monday to Friday. Conditions of service are excellent, including the provision of protective clothing.

Pay: £53.67 per week plus bonus.

Application forms obtainable from the Personnel & Training Officer, Directorate of Civil Engineering & Public Services, London Borough of Lambeth, George West House, 2/3 Clapham Common Northside, London SW4. Tel: 01-720 2177 ext 272. Closing date August 21, 1978.

LAMBETH

Cyngor Dosbarth
Ceredigion
District Council

Applications are invited from suitably qualified/experienced persons (male or female) for the following positions within the Parks and Gardens section of the Technical Services Department.

NURSERY GARDENER

Group E-G £47.30-£49.75 pw
(inclusive of supplements) subject to qualifications

The work involves propagation of both bedding and decorative plants, trees and shrubs, etc.

GROUNDSMAN/GARDENER

Group E-G £47.30-£49.75 pw
(inclusive of supplements) subject to qualifications

Previous experience in the maintenance of bowling greens, putting greens, and football pitches would be an advantage, together with experience in general amenity horticulture.

Further particulars and application forms from:
The Personnel Officer, Town Hall, Aberystwyth, Dyfed.
Tel: 0970 617911.
Closing date—Wednesday, August 23, 1978.

Public and Municipal

BOROUGH OF HIGH PEAK
WORKS DEPARTMENT

ASSISTANT PARKS SUPERINTENDENT—SOUTH

A.P.2/3—£2,967—£3,834 plus £312 supplement per annum.

Based at Buxton, the holder of this post will be responsible to the Parks Superintendent for all employees engaged in the Parks Section working in the southern area of the Borough.
The successful applicant will hold the National Certificate in Horticulture or City & Guilds Amenity Horticulture, Stage III.
Experience in supervision of employees engaged on all aspects covered in the maintenance of Parks and Recreation areas is essential, a relevant supervisory qualification being an advantage.

ARBORIST

Based in Buxton the successful applicant will work with the Forestry Officer on all tree surgery operations within the Borough.
Rate of pay dependent on qualifications—preferably City & Guilds Stage II in Arboriculture—and experience. For fully qualified persons Group 'G' will be payable, ie £43.25 plus £5 supplement per week, national award pending.
Sympathetic consideration given to provision of housing accommodation.
Current driving licences essential for both posts.

Application forms obtainable from the Personnel and Management Services Department. Closing date noon, Monday, January 29, 1979.

Council Offices, Reservoir Road, Whaley Bridge, via Stockport, Cheshire
Tel: Whaley Bridge 2163

LONDON BOROUGH
OF SUTTON
Technical Services Department

DRIVER/ASSISTANT TREE PRUNER

Wages £52.47 for a 40 hour, 5 day week.
Required for the Parks Section, Arboricultural Division, based at Cheam Park Depot, Tudor Close, Cheam.
Housing accommodation may be available on a service tenancy basis in appropriate cases.

ASSISTANT TREE PRUNER/STAND BY DRIVER

Wages £52.47 for a 40 hour, 5 day week.
Required for the Parks Section, Arboricultural Division, based at Cheam Park Depot, Tudor Close, Cheam.

Application forms and further details obtainable from Parks Manager, Technical Offices, 24 Denmark Road, Carshalton, Surrey. Tel: 01-661 5578.
Closing date February 8, 1979.

EAST SUSSEX COUNTY
COUNCIL
HIGHWAYS & TRANSPORTATION DEPARTMENT

TREEWORK

FOREMAN

Required to lead a three man mobile gang based in the Lewes area and concerned with maintenance of highway trees, particularly in urban streets and on bus routes.

Commencing wage including bonus approximately £62 for a 40 hour week. Grading subject to review after one year's satisfactory service.

Experience in tree felling and surgery, ability to work safely at heights within the highway and to manage men is required. Valid driving licence essential. HGV an advantage.

Preference will be given to suitable applicants (male or female) currently living in the Lewes area.

Application should be in writing to the County Engineer, Phoenix Causeway, Lewes BN7 1UE by 31 January 1979.

WAVERLEY DISTRICT
COUNCIL

GROUNDSMAN/WOMAN

Farnham, Surrey
£55-£60 per week

To prepare to a high standard grounds at Farnham Park and other open spaces for golf, bowls, football and cricket.
Detached house available near to town centre. Wages £55-£60 depending on experience and bonus earnings. Wage award pending. Permanent, pensionable post.

Apply in writing to Chief Technical Services Officer, Waverley District Council, Bury Fields, Guildford by 28th February.

INNER LONDON
EDUCATION AUTHORITY
Stockgrove Park School, Heath & Reach, Nr Leighton Buzzard, Beds.

EXPERIENCED GARDENER/CARETAKER

required for this boarding special school. Duties: Overall responsibility for upkeep of 17 acres of lawns and flower beds, swimming bath and general caretaking duties some driving. Wages £60.99 inclusive of allowances. Rent-free unfurnished three-bedroomed lodge with fuel, light and water within prescribed limits.

PROFESSIONAL, EXPERIENCED GARDENERS ONLY

Application form and details from ILEA, EO ESTAB 6, Room 261, County Hall, London SE1 7PB or phone 01-633 7252. Closing date for applications 13-2-79.

LONDON BOROUGH
OF SUTTON
TECHNICAL SERVICES
DEPARTMENT

GROUNDSPERSON

Wages £53.67-£54.92 per week (plus bonus) for a 40 hour week.
A suitably qualified person is required to maintain the Clockhouse Playing Field, which contains cricket, rugby and hockey pitches. The successful candidate must be able to drive a tractor and use a range of maintenance equipment, including gang mowers, current ordinary driving licence essential. Housing available on a service tenancy basis, in appropriate cases.
Application forms and further details obtainable from Parks Manager, Technical Offices, 24 Denmark Road, Carshalton, Surrey. Tel: 01-661 5578.
Closing date February 8, 1979.

ROTHER DISTRICT
COUNCIL
PARKS & RECREATION
DEPARTMENT

CHARGEHAND GARDENER/GROUNDSMAN/WOMAN (RYE)

Required to maintain sports grounds, gardens and other Council owned recreational facilities. Applicants must be physically fit and preference will be given to persons with appropriate qualification.
The basic rate of pay is £49.00 per week, plus participation in the incentive bonus scheme. A limited amount of overtime may be required.
Other terms and conditions as per the NJC for Local Authorities' services (Manual Workers).

HOUSING AVAILABLE
Application form available from: Personnel & Management Services Officer, Town Hall, Bexhill-on-Sea, E. Sussex. (Tel: Bexhill 216321, ext 217). Closing date for receipt of applications 2nd February, 1979.

BOROUGH OF HOVE

Parks and Cemeteries
Department

CRAFTSMAN/WOMAN GARDENER/GLASS-HOUSE WORKER

This position requires experience in production of bedding/decorative plants under glass. Some overtime working essential.

2 bedroom flat available for rent. Group F or G payable according to experience and qualifications.

Average wage including bonus and O T up to approx. £61 p.w. (pay award pending).

Applications stating age, experience, qualifications, etc, to Director of Parks, Town Hall, Hove Sussex, BN3 4AH. Tel: 0273 775400.

Private & Trade

WANTED IN WEST GERMANY

Several tree surgeons.
Good climbers and cutters.

We work in Berlin, Hamburg, Essen, München.

The salary is good.

Please write to:
Kusche und Frotscher
Berliner Baumdienst GmbH
Weinmeisterhornweg 189
1000 Berlin 20
West Germany.

GARDEN CENTRE/NURSERY

requires enthusiastic person with knowledge of House plants and ornamental container plants to assist in sales.

Must also be prepared to help in general routine associated with Garden Centre/Nursery. Housing accommodation available if required.

Please ring RAGLAN 690751 or write to Mr C. Salter, Welsh Tree Services Ltd, Raglan, Gwent.

BRACKNELL DISTRICT COUNCIL

EXPERIENCED ARBORIST

This Council is seeking to appoint an experienced Arborist to lead a small team within its landscape Maintenance Section.
Applicants should be fully experienced in all aspects of tree maintenance, using powered equipment and be able to work at heights.
The rate of pay is £53.05 per 40-hour week inclusive of Local Weighting. In addition bonus earnings averaging £20 per week are payable. A National pay award is pending.
Housing accommodation with financial assistance towards relocation is available in appropriate cases.
Applications in writing, please, to: Landscape Maintenance Manager, Manor Farm, Mill Lane, Bracknell, Berkshire, or telephone Mr S. Southgate on Bracknell 24010.

For Sale

LARGE GARAGE SITE, over one acre. A number of buildings. Petrol sales. Tremendous potential as a garden centre. 2 miles new city, Milton Keynes. For futher details please ring Woburn Sands 583050.

PLEASE MENTION GC&HTJ WHEN REPLYING TO ADVERTISEMENTS

APPENDIX 64.

Review of Legal Case concerning City Liability for Overhanging Trees

BRITISH COLUMBIA

COURT OF APPEAL

Before Davey, Maclean and Branca, JJ.A.

Millar & Brown Ltd. (Plaintiff) Respondent
v. **Vancouver (City)** (Defendant) Appellant

Municipal Corporations — Overhanging Tree Causing Damage to Truck — Misfeasance or Non-Feasance.

Appeal from the judgment of Gregory, J., (1966) 55 WWR 59. Appeal allowed.

Respondent's truck was damaged when it collided with the overhanging bough of a tree planted by appellant; Gregory, J. found that the planting of the tree in a place so close to the street that it interfered, after growth, with the use thereof, and the failure to trim its boughs amounted, together, to misfeasance.

It was *held, per curiam,* that the planting of the tree without any plans for future lopping was not, in itself, a negligent act or a nuisance; the nuisance arose only in the course of years when the tree developed so that it overhung the highway, and the appellant's failure to abate it amounted to no more than non-feasance, for which it was not liable: *Mainwaring v. Nanaimo (City)* (1951) 3 WWR (NS) 258, at 260, 261, 5 Abr Con (2nd) 772 (B.C. C.A.) applied.

[Note up with 16 CED (2nd ed.) *Municipal Corporations,* sec. 81.]

C. S. G. Fleming, for defendant, appellant.

J. R. MacLeod, for plaintiff, respondent.

September 26, 1966.

The judgment of the court was delivered by

DAVEY, J.A. (orally) — While the respondent's truck was driving along 12th Ave. in the city of Vancouver, in a proper manner, it collided with a bough, a substantial bough of an overhanging tree, that had been planted by the city many years ago on the boulevard. The collision damaged the truck. The respondent sued the city for the damage so resulting.

Gregory, J., who conducted the trial, (1966) 55 WWR 59, found in favour of the respondent. The appellant city appeals on the ground that under the *Vancouver City Charter,* 1953, ch. 55, as it is now drawn, it is liable in negligence or nuisance only for acts of misfeasance and not for nuisance or negligence resulting from non-feasance. I think it is clear under the present *Vancouver Charter* that counsel's submission in that respect is correct, and that the city of Vancouver is liable in nuisance or in negligence only for acts of misfeasance.

In his reasons for judgment the learned trial judge, after having held that the city was liable both in negligence and in

nuisance, found that the negligence and nuisance resulted from acts of misfeasance and not from mere non-feasance. He said this at p. 62, and I quote:

> "Viewed in this light, I have reached the conclusion that the city of Vancouver was guilty of misfeasance in planting a tree so close to the street that when it grew in the normal way its boughs would interfere with the normal and proper use of the street and to make no provision for trimming its boughs to prevent their doing so."

It seems quite clear to me, with respect to the learned trial judge, that when that tree was first planted it was no impediment to people using the street, and only became so in the course of years when it grew to such an extent that its overhanging boughs projected onto the highway and beyond the curb lane. The city's failure to cut and lop the branches and trim the tree when that danger arose was mere non-feasance for which it is not liable. I do not think, as I read the judgment, that the learned trial judge, if he accepted that premise, would disagree with the conclusion, but in the passage which I have just quoted he seems, as I understand it, to have concluded that when the city planted the tree it was necessary at that time to make some provision for the future lopping of the tree when the need arose, and because the tree was planted without making any provision for future lopping years thence, that the planting of the tree then constituted a source of danger and was an act of misfeasance. With that, with respect, I disagree. I think there was no need on the city to make plans to lop that tree or to trim it until the danger arose from its normal growth years thence. That being so, in my opinion, the planting of the tree without any plans made for future lopping was not a negligent or dangerous act or a nuisance. The nuisance arose through the omission of the city to take steps to remove the impediment when the impediment developed.

It seems to me that this case is governed by *Douglas v. Vancouver (City)* in which the learned chief justice delivered the judgment of the court. It is unreported but the reasons were handed down on September 23, 1958. In that appeal the court followed *Mainwaring v. Nanaimo (City)* (1951) 3 WWR (NS) 258, at 260 and 261, a judgment of the late Sloan, C.J.

I would allow the appeal and dismiss the action.

APPENDIX 65.

Detailed Pest Profile

PEST NAME

Family

Genus

Species

Accepted Common Name

Local Name or Names

Previously Accepted Latin Name

GEOGRAPHIC INFORMATION

Place of Origin

Present Range

Present Occurrence

Population Distribution

Typical Habitat

Habitat Prerequisites for Successful Establishment

Environmental Prerequisites for Successful Establishment

Host Prerequisites for Successful Establishment

RECOGNITION

Description of Eggs

- Size
- Color
- Number
- Texture

Description of Larvae

- Color
- Shape
- Silhouette
- Size

Characteristics

Evidence of the Larvae

- Faecal Deposits
- Frass
- Webbing
- Other

Description of Pupae

- Color
- Shape
- Size

Description of Adult

- Female
- Male (Colour markings, size and silhouette)

Preferred Host

Alternative Hosts

Description of Damage

- Time Seen
- Location of Damage
- Type of Damage
- Evidence of Damage
- Later Result of Damage
- Diagnostic Aids
- Predisposing Factors in Host

LIFE CYCLE

Female Egg Laying

- Start
- Length of Time
- Factors Controlling

Obligatory Diapause

- Start
- Length of Time
- Factors Controlling

Egg Hatch

- Start
- Length of Time
- Factors Controlling
- Time of Emergence

Larvae Dispersal

- Factors Controlling

Larvae Feeding

- Start
- Length of Time - consumption rates
- Factors Controlling

Pupation

- Start
- Length of Time
- Factors Controlling

Emergence - Males

- Length of Time
- Factors Controlling

Emergence - Females

- Length of Time
- Factors Controlling

Mating

- Start
- Time of Copulation
- Factors Controlling

Number of Generations

Type of Metamorphasis

V/C Factors Affecting Population

Environmental Factors

- Eggs
- Larvae
- Pupae
- Adults

Predation

- Eggs
- Larvae
- Pupae
- Adults

Parasiticism

- Eggs
- Larvae
- Pupae
- Adults

Host Factors

- Eggs
- Larvae
- Adults

Rate of Reproduction

- Fecundity
- Mortality
- Genetic Amplitude
- Resistance to Environmental Stress

Rate of Growth and Development

Behavior Larvae Prior to Egg Hatch

Larvae at time of emergence

Larvae

- Movement
- Dispersal
- Host Selection
- Migration
- Immigration
- Emigration
- Feeding
- Growth and Development
- Tropistic Factors
- Methods of Locomotion
- Number of Instars
- Time spent in Instars
- Factors Controlling
- Behaviour prior to Pupation

Pupation

Adult Emergence

- Male
- Female

Initial Behaviour

Dispersal Behaviour

Mating

- Timing
- Place
- Cues
- Factors Affecting
- Other Behaviour

Egg Laying

- Ova Position
- Searching
- Other Behaviour

MANAGEMENT

Surveys

Eradication

Containment

Controls in Nature

Host Resistance

Cultural Practice

- Pruning
- Rotations
- Fertilizing
- Spacing
- Other Practice

Physical Controls

- Sanitation
- Removal of Pest
- Trapping
- Washing

Chemical Controls

- Insecticides
- Insecticides Broadcast
- Insecticides Spot Treatment
- Insecticides Liquid
- Insecticides Dust
- Timing

Bio Controls

- Hormonal
- Microbial
- Viral
- Phermones for Confusion
- Phermones for Attraction
- Competition
- Natural Control Enhancement
- Sterile Males
- Artificial Diets

Regulatory Controls

- Quarantine
- Shipping Constraints
- Inspection

Strategy

- Timing
- Logistics
- Goals
- Value of the Host
- Degree of Infestation
- Pest Numbers
- Pest Location
- Vector Potential
- Likelihood of Natural Controls
- Season
- Pest Life Cycle
- Number of Generations per Year
- Economic Threshold
- Visual Threshold
- Damage Treshold
- Effectiveness of Controls
- Timing of Diagnosis
- Health Concerns
- Availability of Dollars
- Availability of Qualified Staff
- Availability of Equipment

APPENDIX 66.

Review of Tasks requiring
Method Analysis

PRACTICAL FIELD TASKS

Nursery

Ground preparation

Draining

Planting

Plant propagation

Fertilizing

Weeding

Pruning

Insect and Disease Control

Lifting

Balling and Burlapping

Spraying with Anti-transpirent

Loading and Transportation

Planting and Establishment

Digging and Planting

Staking and Tieing

Watering

Fertilizing

Pruning

Wrapping

Mulching

Re-grassing or treatment at Bases

Small Tree Maintenance

Trimming

Sucker Control

Water Spout Control

Fertilizing

Watering

Stake and Tie Repair

Stake and Tie Removal

Wound Repair

Weed and Grass Control

Special Care in Beautification Areas

- Base Plantings
- Gratings
- Tree Guards
- Tree Lights

Removal or Replacement

General Tree Maintenance

Trimming

Pruning

Low branching

Thinning

Testing and Inspection

Tree Surgery

Sucker Control

Water Spout Control

Fertilizing

Insect Control

Disease Control

Bird or Wasp Control

Weed Control

Fruit or Leaf Control

Root Pruning

Stake and tie removal

Support

Removal

Digging

Falling and Burlapping

Lifting

Treating with Antidesicant

Transport and Storage

Replanting

Replacement

Take Down

Utilization

Removal and Disposal

Stumping

APPENDIX 67.

Example Specification produced
by Special Projects Group in
the City Engineer's Office

CITY OF VANCOUVER

TENDER NUMBER 743 Kerrisdale. Beautification

LANDSCAPING SPECIFICATION

RE-GRADING

EXISTING CONDITIONS

The Contractor shall:

- examine all existing conditions under which this portion of the work shall be performed;
- ascertain the size and location of all existing services and subgrades prior to this work and ensure adequate protection is provided.

Any damage or errors resulting from failure to exercise such precautions shall be the responsibility of the Contractor.

MATERIALS

Soil fill material shall be free of stones or impervious lumps greater than 3-inch diameter. This soil fill shall be of mixed composition containing a high percentage of sand content and some organic content.

METHODS

The existing subgrade shall be regraded to 13 inches below designed finished grade under ground cover areas, 24 inches below designed finished grade under shrub areas, and 30 inches below designed finished grade in tree pits.

The Contractor shall bring up the existing low areas to the proper subgrade level. Areas where the existing level is above subgrade elevation shall be excavated and lowered. Any roots or debris shall be removed from the site.

All subsoil grading and levels shall be inspected and approved by the Engineer.

SAMPLES

Representative samples (2pounds each) of proposed topsoil materials shall be supplied to the Engineer. Such samples shall be identified as to source. Submissions shall be made at least one week prior to placement, to permit checking for suitability.

TESTING

Testing of materials and work described in this Section shall be carried out in accordance with the Engineer's requirements.

APPROVALS

Prior to placing of topsoil, all subsoil grading and levels shall be inspected and approved by the Engineer. All topsoil materials shall be approved by the Engineer prior to placement.

CLIMATE AND WEATHER

Topsoil shall not be placed during rain.

MATERIALS

Topsoil shall be fertile, friable natural loam, neither heavy clay nor of light sandy nature and shall be capable of supporting vigorous, healthy plant growth.

All topsoil used shall have an acidity range of pH 5.0 to 7.0 and shall contain not less than 5% organic matter.

METHODS

Placement

Topsoil shall be placed to a depth of 13 inches on areas to be covered by ground cover and to a depth of 24 inches on shrub beds.

Vehicles or machinery with wheel loads in excess of 1,000 pounds shall not be moved over placed materials.

PLANTING

Preparation

Prior to planting, the Engineer will inspect the final grade, depth and physical condition of topsoil over the areas to be planted.

Where no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls (such as walks, curbs, catch basins, elevations at steps or buildings) and elevation shown on plan. Roll, scarify, rake and level as necessary with light equipment, to obtain even surfaces.

General Requirements

Plant materials shall mean trees, shrubs, and plants of all descriptions, required to be furnished for the work in accordance with plans and as specified. Source of supply of all plant material shall be given in writing. All plant material shall be inspected and approved by the Engineer before planting. Plants may be rejected by the Engineer if they are considered unsuitable for the site or do not meet the specifications in any way. Approval does not impair the right of the Engineer to reject any plant at the site during the progress of the work for later defects and injuries.

Plant materials shall conform to the code of standards set forth in the current edition of Guide Specification for Nursery Stock recommended for general use and adoption by the Canadian Nursery Trades Association.

Substitutions

Substitutions will not be permitted. However, the Contractor may be permitted to suggest substitutions with types and variations possessing the same characteristics, if in the opinion of the Engineer, they are the equivalent and such proposed substitutions are presented to the Engineer in writing in sufficient time for consideration.

Planting Time

Planting shall be carried out during the season or seasons which are normal for such work as determined by weather conditions and by accepted practice in the locality of the project. Spring planting shall be completed before the buds have started to break and fall planting shall be completed before the ground is frozen. If special conditions exist, which may warrant a variance in the above planting seasons, a written request shall be submitted to the Engineer stating the special conditions and the proposed variance.

In all cases the Engineer shall be informed before the start of any planting.

PLANTING

MATERIALS

Plant Material

Plant material shall be of standard quality true to name and type and first class representatives of their species or variety. Plants will be subject to inspection for quality, size and colour. Plants lacking compactness or proper proportions, plants which are weak or thin, or plants injured by too close planting in nursery rows will not be accepted.

Plant shall be freshly dug at time of delivery.

Plant noted B & B (Balled and Burlapped) on Drawing No. GA-67-A shall be dug with ball of earth and burlapped separately. The Engineer may reject any B & B plant arriving at the site with broken or loose root balls.

Plants noted Cont. (Container-grown) on Drawing No. GA-67-A must be container-grown with well established root systems. Plants shall be grown in the container for minimum of three months and not in excess of two growing seasons.

Plant materials which have been cut back from larger grades to meet certain specified requirements will be rejected. Rejected plants shall be removed from the site. Plants should not be pruned prior to delivery.

Plants shall have normal, well-developed branches and vigorous fibrous root system. They shall be healthy vigorous plants free from defects, decay, disfiguring roots, sun-scald injuries, abrasions of the bark, plant diseases, insect pests eggs, borers and all forms of infestation of objectionable disfigurements.

Ground cover plants shall have healthy tops to a size proportionate to the above root requirements typical to species or variety.

Topsoil

As described in relevant Section.

Planting Soil

Shall consist of 2 parts of peat moss and 1 part of manure, thoroughly mixed with 5 parts of topsoil, with 2 ounces of specified fertilizer per cubic foot and 4 ounces of bone meal per cubic foot added.

Manure

Shall be well-rotted, unleached cattle manure, containing not more than 40% by volume sawdust bedding material, free of harmful chemicals used to hasten decomposition artificially.

PLANTING

Fertilizer

Uniform in composition, free flowing and dry, granular or pelleted commercial product with 50% of total nitrogen derived from natural organic material in a slowly available form; delivered in unopened containers with the analysis, type and trade name attached to each container. Store in weatherproof place with care to prevent loss of effectiveness of fertilizer.

Bonemeal

Shall be finely ground commercial raw bonemeal with a minimum of 4% nitrogen and a minimum of 20% phosphoric acid, delivered in standard size bags which show weight analysis and manufacturer's name, stored in weatherproof place in such manner that its effectiveness will not be impaired.

Bark Mulch

The bark mulch shall be all Douglas fir, jet-washed and flame-dried to eliminate weed seeds and spores.

Tree Guying Stakes and Ties

Stakes shall consist of 2" x 2" x 10' long Douglas fir. The ties shall be made with No. 12 galvanized wire covered with rubber garden hose of at least ½-inch I.D.

METHODS

Planting Operation

The Contractor shall be responsible for planting at correct grades and alignment and shall stake out on the ground location of the plants and outlines of areas to be planted as shown on the drawings, and obtain confirmation from the Engineer before proceeding further. The Engineer reserves the right to relocate any plant or plants before planting.

Planting Soil

Planting soil shall be prepared in a quantity sufficient to cover the bottom and two-thirds of the sides of all tree and shrub pits.

Digging and Handling Plants

Handle all plants so that roots are adequately protected at all times.

During shipment, all plants shall be properly protected by peat moss, sawdust or other acceptable moisture holding material against excessive drying from sun and wind. The Engineer may reject any plant he considers in unsatisfactory condition on arrival at site.

Plants shall be shipped to the site to arrive at a suitable time for immediate planting. If, for some unforeseen circumstance, plants cannot be planted

Digging and Handling Plants (Cont'd)

immediately, all material shall be maintained as follows:
- B & B and Cont. plants shall be set on the ground and well protected with moisture holding material (peat, sawdust, etc.)

Excavation of Planting Areas

Circular pits with vertical sides shall be excavated for all trees. Diameter of pits for B & B material shall be at least one (1) foot greater than the spread of the ball. The depth of all plant pits shall be the depth below finished grade required to accommodate beneath the ball a bed of previously prepared planting soil not less than 8 inches in depth. The ball shall rest on this bed when the plant is properly set to finished grade.

Ground cover areas shall be graded smooth before planting, ground cover plants. Before planting, spread commercial fertilizer at the rate of 4 pounds per 1000 square feet over entire ground cover to within one (1) foot from trunk of tree or shrub planted within the area.

Excavated material shall be removed from the planting area.

Planting Procedure

All planting of B & B plants, unless otherwise directed, shall be performed as herein specified.

B & B plants placed in their wrapped ball shall be so set that after settlement they will stand at approximately the same depth as in nursery.

The plant pit shall be backfilled with planting soil, placed in layers around the roots or ball, preferably by hand. Each layer shall be carefully tamped in place in a manner to avoid injury to the roots or ball or disturbing the position of plant. When approximately two-thirds of the plant pit has been backfilled, the pit shall be filled with water and the soil allowed to settle around the roots. B & B plants shall have the burlap cut away or folded back from the top of the ball before applying water. After the water has been absorbed, the plant pit shall be filled with planting soil and tamped lightly to grade. Any settlement shall be brought to grade with planting soil.

The surface area of all plant pits or beds shall be spread with bonemeal at the rate of 4 pounds per 1000 square feet. The bonemeal shall be lightly raked into the topsoil.

A 4-inch deep depression (saucer) shall be formed around the edge of tree or shrub pits or along the trench, to facilitate watering.

No planting except ground covers shall be placed closer than two (2) feet to pavements or sidewalks.

PLANTING

Mulching

All plant beds and pits shall be thoroughly mulched with bark mulch to a depth of 3 inches minimum over the shrub and tree pits and to a depth of 1 inch minimum on ground cover beds. Mulch shall be applied within two days after planting.

It is not intended that mulch shall be used to fill in between shrubs where shrubs are arranged in groups. Topsoil shall be used to bring the planted areas to finished grade.

Pruning

Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve natural character of plant. Pruning shall be done with clean, sharp tools. Evergreen plants shall not be pruned except to remove dead or broken branches.

Guying and Staking

Each tree shall be staked with one stake set vertically and driven 3 feet into the ground prior to planting.

Guy trees to stake by means of tree ties, making sure they will not cut into the bark or restrict the growth of the tree. Two tree ties shall be used per tree. One shall be placed 6 inches below the top of the stake and the other 6 inches below the first side branches, on trees with clear stems, provided they occur 4 feet above ground. Tree ties shall be subject to approval by the Engineer.

MAINTENANCE

General Conditions

Planting maintenance shall include all necessary watering, cultivation, weeding, pruning, wound dressing, disease and insect control, protective spraying, replacement of unacceptable material, straightening plants which lean or sag, adjustment of plants which settle or are planted too low, and any other procedure consistent with good horticultural practice necessary to insure normal, vigorous and healthy growth of all work under this Contract.

Watering

The quantity of water applied at one time shall be sufficient to penetrate the soil to a minimum depth of 8 inches at a rate which will prevent saturation of the soil.

Weeding

Keep all planting areas free from weeds and undesirable grasses by a method and by materials approved by the Engineer.

PLANTING

Replacements

The Contractor shall be responsible for all plant material until each individual plant has successfully survived one growing season. The Contractor shall replace each defective or dead plant during the next planting season and shall continue to replace each plant until it has established itself to the satisfaction of the Engineer.

CLEAN-UP

Clean-Up

When planting has been completed, the area shall be thoroughly cleaned. Debris, rubbish, subsoil and waste materials shall be cleaned up and removed from the site. All planting areas shall be neatly dressed and finished and all walks and paved areas shall be flushed clean to the satisfaction of the Engineer.

APPENDIX 68.

Park Board Short General
Guide to Tree Trimming

GENERAL GUIDE TO TREE TRIMMING

Tree Maintenance Practices are to "National Shade Tree Standards"

Basically trees are permitted to retain their natural habits and characteristics.

To attain this desired standard:

1. Dead limbs and inward growing limbs are pruned out to permit healthy air circulation through tree and good balance and growth to tree.

2. Broken limbs are entirely removed or "drop crotched" depending on:

   1. Tree type
   2. Structure and visual concept of tree

   All cuts are made through "shoulder healing rings" if possible.

3. Young trees are shaped by pruning out low growing limbs; and cross limbs in centre, to form good framework for future development of tree.
   On "worked" trees, stock growths have to be pruned out to permit "scion" to fully develop where habit of tree permits, single leader is maintained whenever possible, to prevent future breakage (trunk splitting).

EXCEPTIONS TO BASIC TREE TRIMMING PRACTICES

(A) Line Clearance

i.e. Where overhead "utility" wires exist adjacent to street trees

(1) Trees are tunneled to prevent possible "electrical arching"

(2) Trees are "drop crotched" to give line clearance (aesthetically the best treatment)

(3) Trees are "pleached" annually when directly under overhead lines eg. Adanac St. under trans-Canada Long Distance Telephone lines.

(4) Trees are "pollarded"
This practice is necessary where old trees have had to be severely cut back for many years. (This practice invariably starts internal trunk Rot and its practice is not continued. Large branches will break off ,

because of snow and wind note: most of these trees have been or will be removed and replaced with new trees to avoid this trimming practice.

This condition in many trees was started many years ago before "utility" wires were placed underground or in lane easements.

(B) Traffic Vision

Many lower branches on trees have to be trimmed off to meet standards set by Traffic Engineer in regard to innumerable types of Traffic Signs, High Traffic Lights etc.

(C) Street Lighting

The installation of sophisticated high "davit" type street light standards necessitates the removal of ALL low branches to permit proper A.R.C. Radius from light standard. Note: High intensity light from fixtures seems to intensify the darkness in shadow cast, which creates persistant, vociferous complaints from taxpayers who are paying tax for light, but not for trees. Many of public do not appreciate aesthetic or ecological functions of trees in urban environment.

(D) Mobiles (Trucks - trailer trucks - garbage packers - fire engines)

Low limbs are removed that could possibly damage any of the many high structured vehicles.

City is liable for damage caused to any vehicle driving anywhere on roadway.

(E) Branches Overhanging Private Property

Legally any branch overhanging private property may be cut off by owner.

To delete this possibility, trees that tend to have overhanging branches, have to be shortened or cut back to main trunk to overcome the problem. Note: City is liable to any damages caused by dropping of leaves, twigs, etc. from overhanging branches (e.g. 19th and Arbutus: City paid costs of new gutters: replastering inside of house, repainting house inside and out because of street tree.

(F) Underground Services

When underground services of new gas mains, sewer mains, water lines etc. have to be installed on boulevards (sometimes quite close to large street trees) all roots may be cut on one side of tree. If top of tree is not diminished trees will blow over. Either "off side" branches are removed on top. "Drop-crotched" to streamline until tree regroots.

(G) Curb Adjustments

Many large trees have to be topped to stabilize balance of tree. When roots are cut by engineering dept. when adjusting street curbs.

(H) Topping For Broken Tops

Some varieties of trees (elms) are prone to large top branches "breaking off".

These trees are "drop-crotched" below breakage height to permit clean cut so that wound may heal.

(I) Topping For View

On a few streets where good trees interfere with view. Trees are "drop-crotched" and thinned to passify property owners with view. Trees have to be topped approximately every 5 years. This practice was on decree of Board members.

c.c. W.C. Livingstone

Park Board Office
2099 Beach Avenue
Vancouver, B.C.

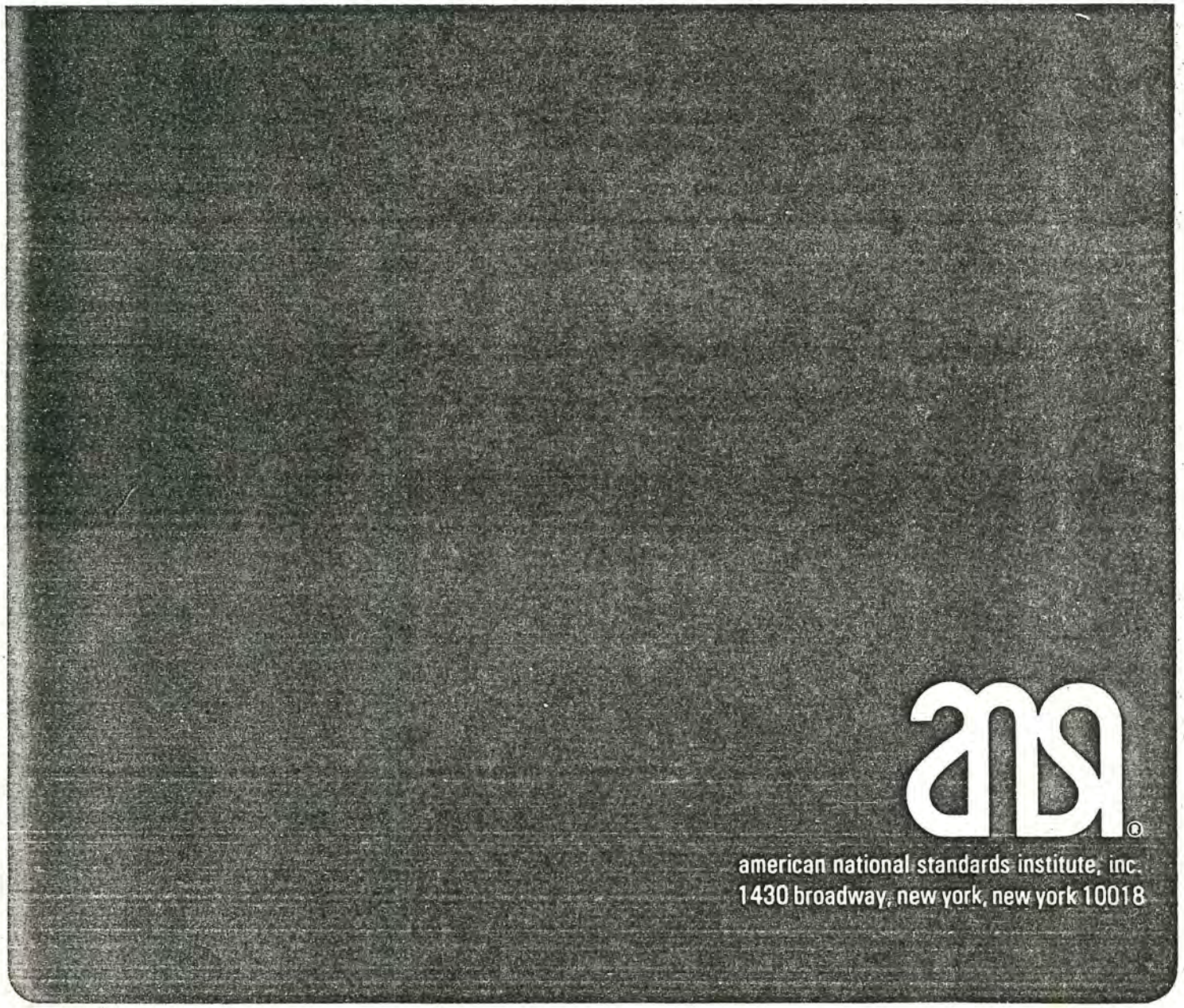
January 30, 1974

APPENDIX 69.

Reference Examples of Well Prepared Standards

American National Standard

safety requirements for tree pruning, trimming, repairing, or removal



american national standards institute, inc.
1430 broadway, new york, new york 10018

Z133.1-1972

ANSI
Z133.1-1972

American National Standard Safety Requirements for Tree Pruning, Trimming, Repairing, or Removal

Secretariat

International Shade Tree Conference

Approved December 20, 1972

American National Standards Institute, Inc

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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Published by

American National Standards Institute
1430 Broadway, New York, New York 10018

Printed in the United States of America

W1½M1272/350

Foreword

(This Foreword is not a part of American National Standard Safety Requirements for Tree Pruning, Trimming, Repairing, or Removal, Z133.1-1972.)

This standard was developed under the procedures of the American National Standards Institute by Standards Committee Z133 on Safety in Tree Trimming Operations. The secretariat of Z133 is held by the International Shade Tree Conference.

American National Standards Committee Z133 was organized in response to efforts by Mrs Ethel M. Hugg of Johnstown, N.Y. Mrs Hugg's son had died while trimming trees, and this tragic incident caused her to write to federal and state authorities, and to various safety organizations, in an attempt to have measures initiated that would make tree trimming safer.

The Z133 Committee was organized on April 4, 1968, with the National Arborist Association as secretariat. Committee delegates included representatives of industry, labor, the academic community, and government; equipment manufacturers; insurance carriers; and other interested experts. The International Shade Tree Conference became secretariat of the Committee in November 1969.

Five Subcommittees were formed to develop specific portions of the standard. Each Subcommittee prepared and edited material in its area of concern; the material was then combined and submitted to the full Committee for review. One of the Subcommittees also met with representatives of the Occupational Safety and Health Administration, U.S. Department of Labor.

An initial draft was submitted for Committee ballot on March 2, 1971; a revised draft was unanimously adopted on July 14, 1971.

The Z133 Committee will continue to be available for interpretation or clarification of the intent of the requirements in the standard, and for any adjustments or revision of the standard.

Suggestions for improvement of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

American National Standards Committee on Safety in Tree Trimming Operations, Z133, had the following members at the time it processed and approved this standard:

Gordon S. King, Chairman
Richard E. Abbott, Vice-Chairman
E. C. Bundy, Secretary

Organization Represented	*Name of Representative*
American Association of Nurserymen	Ray Brush
American Insurance Association	Edward Domrzalski
Asplundh Tree Expert Company	Robert R. Herder
F. A. Bartlett Tree Expert Company	Robert E. Sayre
Communications Workers of America	John J. O'Brien
Davey Tree Expert Company	L. C. McKelvey
Edison Electric Institute	R. E. Disbrow
	James J. Cawley (Alt)
	D. E. Ruff (Alt)
Federal Safety Council	R. Hollis
International Brotherhood of Electrical Workers	A. Neseth
	Edward J. Legan (Alt)
International Shade Tree Conference	Jack N. Stenberg
National Arborist Association	Erik H. Haupt
	Joseph W. Brine, Jr (Alt)
	Paul Ramsey (Alt)
	Roland Shannon, Jr (Alt)
	George Tyler (Alt)
National Park Service	Bernhard A. Kolb
National Safety Council	Samuel G. Blakely
Power Saw Manufacturers Association	Will Rusch
Public Utility Arborist Association	Herbert J. Cran, Jr

Organization Represented	*Name of Representative*
Telephone Group	James H. Amalong J. R. Hands (Alt)
U.S. Department of Agriculture, Forest Service	Robert S. Dimmick Robert Hitt (Alt)
U.S. Department of Labor, Occupational Safety and Health Administration	Richard M. Ronk Thomas Seymour (Alt)
Individual Members	Edward F. Hugg Ethel M. Hugg

The following Subcommittees were responsible for developing specific portions of the standard:

Subcommittee 1	General Safety Requirements	Richard M. Ronk (U.S. Department of Labor, Occupational Safety and Health Administration)
Subcommittee 2	Electrical Hazards	Jack N. Stenberg (Consumers Power Company)
Subcommittee 3	Equipment Safety Requirements	Thomas Seymour (U.S. Department of Labor, Occupational Safety and Health Administration)
Subcommittee 4	Portable Hand and Power Tool Safety Requirements	Robert S. Dimmick (U.S. Department of Agriculture, Forest Service)
Subcommittee 5	Work Procedures	Bernhard A. Kolb (National Park Service) Robert E. Sayre (F. A. Bartlett Tree Expert Company)

Contents

SECTION PAGE

American National Standard Safety Requirements for Tree Pruning, Trimming, Repairing, or Removal

1. General

1.1 Scope. This standard presents safety requirements for tree pruning, trimming, repairing, removal, and brush cutting, and for the equipment used in such operations.

1.2 Purpose. The purpose of this standard is to provide safety criteria for workers and the public. It is intended as a guide to federal, state, and municipal authorities in the drafting of their regulations and may be adopted by them in whole or in part.

1.3 Application. This standard is intended for any employer engaged in the business, trade, or performance of tree pruning, trimming, repairing, removal, or brush cutting, who hires one or more persons to perform such work. It is also intended, through voluntary use, as a standard reference for safety requirements for those engaged in tree pruning, trimming, repairing, or removal. It is proposed that each employer shall be familiar with, and comply with, sections of this standard where applicable.

2. Definitions

approved. Acceptable to the authority having jurisdiction.

electrical conductor. Any overhead or underground electrical device, including communications wires and cables, power lines, and other such facilities.

qualified line-clearance tree trimmer. A tree worker who through related training and on-the-job experience is familiar with the special techniques and hazards involved in line clearance.

qualified line-clearance tree-trimmer trainee. Any worker regularly assigned to a line-clearance tree-trimming crew and undergoing on-the-job training who, in the course of such training, has demonstrated his ability to perform his duties safely at his level of training.

qualified personnel. Any worker who by reason of his training and experience has demonstrated his ability to safely perform his duties and, where required, is properly licensed in accordance with federal, state, or local laws and regulations.

qualified tree worker. A worker who through related training and on-the-job experience is familiar with the techniques and hazards of tree pruning, trimming, repairing, or removal, and the equipment used in such operations.

shall. As used in this standard, a mandatory requirement.

should. As used in this standard, an advisory requirement.

system operator/owner. The person or organization that operates or controls the electrical conductors involved.

3. General Safety Requirements

3.1 General

3.1.1 Employers shall observe all provisions of applicable federal, state, and local laws for persons engaged in the occupations covered by this standard.

Employees similarly shall comply with safety and health standards and those rules, regulations, and orders which affect their own actions and conduct.

3.1.2 Safety equipment and devices shall conform with the requirements of this standard and shall be maintained in safe condition.

3.1.3 Employers shall instruct their employees in the proper use of all equipment provided for them and shall require that safe working practices be observed. A job briefing, work procedure, and assignment shall be worked out carefully before any tree job is begun.

3.1.4 All equipment, including ropes and lines upon

which the worker must rely for his safety, shall be inspected by the worker each day before use.

3.2 Personal Protective Equipment

3.2.1 Personal protective equipment as outlined in 3.2 shall be required where there is a reasonable probability of injury or illness that can be prevented by such protection. Employees shall use such protection.

3.2.2 Head protection shall be worn by workers engaged in tree operations. It shall conform to the applicable provisions of American National Standard Safety Requirements for Industrial Head Protection, Z89.1-1969. Class B helmets only shall be worn when working in proximity to an electrical conductor, as per American National Standard Safety Requirements for Industrial Protective Helmets for Electrical Workers, Class B, Z89.2-1971. The tree worker shall not place reliance on their dielectric capabilities.

3.2.3 Respiratory protection shall be provided as required in this standard and shall conform to the applicable provisions of American National Standard Practices for Respiratory Protection, Z88.2-1969.

3.2.4 Eye and face protection shall be provided as required in this standard and shall conform to the applicable provisions of American National Standard Practice for Occupational and Educational Eye and Face Protection, Z87.1-1968.

3.2.5 Employees shall wear clothing and footwear appropriate to the work location and condition.

3.2.6 Safety belts or tree-trimming saddle belts of an approved type, or a saddle formed by a double bowline, shall be worn to protect workers above ground level.

3.2.7 Saddle belts or safety belts used for climbing operations shall have forged support-rings. Snaps used in climbing-ropes or in safety straps, for attachment to the forged support-ring, shall be of a self-closing safety type. Forged support-rings shall be designed so that the snaps will not become disengaged (roll off) accidentally.

3.2.8 Safety- and climbing-ropes shall be used when working aloft in trees. These ropes should have a minimum diameter of 1/2 inch and should be 3- or 4-strand first-grade manila, with a nominal breaking strength of 2650 pounds, or its equivalent in strength and durability.

3.2.9 Saddle belts or safety belts shall not be spliced or weakened by punching extra holes.

3.2.10 Climbing-ropes shall not be used to lower limbs or other parts of trees, or to raise or lower equipment.

3.3 First Aid

3.3.1 An approved first-aid kit adequately stocked and maintained shall be provided by the employer when and where operations are being carried on. Each employee shall be instructed in its use. Employees shall also be instructed in appropriate rescue techniques.

3.3.2 An injury of any kind, irrespective of its severity, shall be reported to the employer.

3.3.3 All employees shall be instructed in identification and preventive measures relating to common poisonous plants such as poison ivy, poison oak, and poison sumac.

3.4 Drinking Water

3.4.1 An adequate supply of potable water shall be provided.

3.4.2 Approved containers for drinking water shall be provided. The common drinking cup is prohibited.

3.5 Traffic Control

3.5.1 Effective means for control of pedestrian and vehicular traffic shall be instituted on every job site where necessary.

3.5.2 Traffic control devices used in tree operations shall conform to the applicable federal and state regulations or applicable section of American National Standard Manual on Uniform Traffic Control Devices for Streets and Highways, D6.1-1971.

3.6 Fire Protection

3.6.1 The requirements of the federal, state, and local enforcing authorities shall be complied with in providing the necessary fire protection for tree operations.

3.6.1.1 Gasoline-powered equipment shall be refueled only after it has been stopped. Any spilled fuel shall be removed from the equipment before restarting.

3.6.1.2 Gasoline-powered equipment shall not be operated within 10 feet of any refueling operation or any area in which refueling has recently taken place.

3.6.1.3 Flammable liquids shall be stored, handled, and dispensed only from metal containers or approved safety cans.

3.6.2 Smoking shall be prohibited when handling or working around any flammable liquid.

3.6.3 Disposal of slash, chips, or other refuse from tree operations shall be in a manner in accordance with local regulations or codes.

3.7 Noise

3.7.1 When employees are required to work in areas in which the noise levels exceed acceptable standards as established by federal regulations, the employer shall take appropriate measures to suppress the noise to safe levels. When it is not practicable to decrease the noise or isolate the workers from it, the workers shall wear effective hearing protective equipment as provided by the employer.

3.8 Rescue

3.8.1 Rescue procedures for employees working above ground shall be established by an employer, and the employees trained accordingly.

4. Electrical Hazards

4.1 General. All overhead and underground electrical conductors and all communications wires and cables shall be considered to be energized with potentially fatal voltages and shall never be touched either directly or indirectly.

4.1.1 Every tree worker shall be instructed that:

(1) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.

(2) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.

(3) An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.

(4) Electric shock will occur when a tree worker, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

4.1.2 The system operator/owner shall be advised before any work is performed in proximity to energized conductors. This rule shall not apply to persons working on behalf of, or employed by, the system operator/owner.

4.2 Working in Proximity to Electrical Hazards

4.2.1 A close inspection shall be made by the tree worker and by the man in charge to determine whether an electrical conductor passes through the tree or passes within reaching distance of the tree worker before climbing, entering, or working around any tree. If any of these conditions are found either directly or indirectly, it shall be considered that an electrical hazard exists, unless the system operator/owner has caused the hazard to be removed by de-energizing or installing protective equipment.

4.2.2 Only a qualified line-clearance tree trimmer or qualified line-clearance tree-trimmer trainee will be assigned to the work if it is found that an electrical hazard exists.

Table 1
Minimum Working Distances from Energized Conductors for Line-Clearance Tree Trimmers and Line-Clearance Tree-Trimmer Trainees

Voltage Range (phase to phase) (kV)	Minimum Working Distance
2.1 to 15.0	2 ft 0 in
15.1 to 35.0	2 ft 4 in
35.1 to 46.0	2 ft 6 in
46.1 to 72.5	3 ft 0 in
72.6 to 121.0	3 ft 4 in
138.0 to 145.0	3 ft 6 in
161.0 to 169.0	3 ft 8 in
230.0 to 242.0	5 ft 0 in
345.0 to 362.0	7 ft 0 in
500.0 to 552.0	11 ft 0 in
700.0 to 765.0	15 ft 0 in

4.2.3 During all tree working operations aloft where an electrical hazard of more than 750 V exists, there shall be a second qualified line-clearance tree trimmer or qualified line-clearance tree-trimmer trainee within normal voice communication. This does not apply to utility workers engaged in tree trimming incidental to their normal occupation or to one-man service crews.

4.2.4 Line-clearance tree trimmers and line-clearance tree-trimmer trainees shall maintain clearances from energized conductors as given in Table 1.

4.2.5 Tree workers shall maintain a minimum clearance of 10 feet from any conductors rated 50 kV or less. For lines rated over 50 kV, the minimum clearance shall be 10 feet plus 4/10 inch for each kilovolt over 50 kV. If safe clearances cannot be maintained, the system operator/owner shall be contacted to provide protective measures or devices before any work is begun in or near the tree.

4.2.6 Branches hanging on a conductor may be removed using appropriately insulated equipment.

4.2.7 Rubber footwear, including lineman's overshoes, shall not be considered as providing any measure of safety from electrical hazards.

4.2.8 Ladders, platforms, and aerial devices, including insulated aerial devices, shall not be brought in contact with an electrical conductor. Reliance shall not be placed on their dielectric capabilities.

4.2.9 When an aerial lift device contacts an electrical conductor, the truck supporting the aerial lift device shall be considered as energized, and contact with the truck should be avoided.

4.3 Storm Work and Emergency Conditions

4.3.1 Storm work and emergency conditions create special hazards, and only authorized representatives of the system operator/owner shall perform tree work

where conductors are involved.

4.3.2 When an emergency condition develops due to tree operations, work shall be suspended and the system operator/owner shall be notified immediately.

5. Mobile Equipment Safety Requirements

5.1 General

5.1.1 All vehicles and equipment, regardless of type, shall be equipped and operated in compliance with applicable federal, state, and local laws and regulations, and with manufacturer's specifications.

5.1.2 All exposed drive-belts and gears shall be guarded to prevent accidental contact by workers. Mufflers and exhaust pipes shall be so located or guarded as to prevent contact during normal operations.

5.1.3 All equipment is to be turned off and at rest when repairs or adjustments are made except where manufacturer's procedures require otherwise. All defects or malfunctions affecting the safe operation of any equipment shall be corrected before placing such equipment into use.

5.1.4 Trucks with obscured rear vision, particularly those with trailed vehicles, should be backed up only when absolutely necessary and then only with outside guidance.

5.1.5 All equipment shall be operated by qualified personnel.

5.1.6 All material and equipment carried on vehicles shall be stored so as to prevent them from falling off the truck during transit.

5.1.7 Workers shall not be permitted to ride outside of, or on top of, the vehicle or its load unless they are riding in a designated place or places required by the nature of the operation, such as roadside spraying.

5.1.8 No hoisting or manlifting equipment shall be used to lift more than its rated capacity as stated by the manufacturer's plate or specification.

5.1.9 Pads shall be set under outrigger feet when they are put on a soft surface. Traction for outrigger feet shall be ensured when ice or snow is present.

5.1.10 The manufacturer's instructions shall be followed in detecting hydraulic leaks. Workers shall not attempt to locate hydraulic leaks by feeling.

5.1.11 All step surfaces on equipment shall be skid-resistant.

5.1.12 The manufacturer's recommended maintenance and parts-replacement procedures should be followed.

5.2 Aerial Lifts

5.2.1 All aerial lift equipment used for operations within the scope of this standard shall be in accordance with American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms, A92.2-1969.

5.2.2 Prior to the daily use of an aerial lift device, a visual inspection and operational check shall be made in accordance with the manufacturer's or owner's instructions.

5.2.3 Aerial lift controls shall be guarded or so located as to prevent inadvertent operation.

5.2.4 Aerial buckets, platforms, or booms of such equipment shall be provided with some means of anchorage to which a safety belt or lanyard can be secured.

5.2.5 The combined load, including workers, materials, and tools, shall not exceed the rated lift capacity as stated by the manufacturer. Such rated lift capacity (load rating) shall be conspicuously and permanently posted on the lift in accordance with American National Standard A92.2-1969.

5.2.6 An aerial lift or ladder shall not be used as a crane or hoist to lift or lower materials unless specifically designed to perform such operations.

5.2.7 Wheel chocks shall be installed before using an aerial lift on an incline, provided they can be installed safely.

5.2.8 Pneumatic tools, when being serviced or adjusted, or when not in use, shall be disconnected except where manufacturer's procedures require otherwise.

5.2.9 When hydraulic tools are being serviced or adjusted, they shall be disconnected except where manufacturer's procedures require otherwise.

5.2.10 When operating an aerial lift device, the operator shall look in the direction of travel of the bucket, but should be aware of boom elbow location.

5.2.11 When booms are operated over roads, safe clearances from passing vehicles shall be maintained or traffic control shall be provided.

5.2.12 A one-man bucket shall not have more than one person riding in it during work operations around electrical conductors.

5.2.13 Pressure shall be released before connections are broken to avoid the hazards of flying particles or whipping of hose except where quick-acting connectors are used. Hose shall never be kinked to cut off pressure prior to disconnecting.

5.2.14 No part of the body shall be used to locate or attempt to stop a hydraulic leak. A hydraulic puncture wound will probably cause a generalized infection and result in amputation. Wounds permitting hydraulic fluid to get into the circulatory system have caused death.

5.2.15 All hoses affecting the dielectric characteristics of equipment shall be made of nonconductive material.

Hydraulic fluids for insulated equipment shall be of the insulating type.

5.2.16 Booms or buckets shall not be run into conductors, cables, poles, trees, and similar objects.

5.2.17 Electric cables (as for an electric saw), lights, or other conductive material shall not be run from the truck to the bucket on insulated equipment.

5.2.18 Workers should not ride in the bucket while the truck is being moved.

5.2.19 Booms shall not be operated unless outriggers, where required, are down.

5.2.20 Workers shall not drill holes in aerial lift buckets which may reduce dielectric integrity.

5.2.21 Workers shall maintain a minimum clearance of 10 feet from energized conductors rated 50 kV or less, and for lines rated over 50 kV the minimum clearance shall be 10 feet plus 4/10 inch for each kilovolt over 50 kV, during aerial lift operations, with the exception of qualified line-clearance tree trimmers or qualified line-clearance tree-trimmer trainees using an insulated aerial bucket, who may operate in accordance with the clearances given in Table 1.

5.2.22 Even fully-insulated buckets do not protect workers from other electric paths to the ground, such as paths through trees, guy wire, etc, any one of which can be fatal.

5.2.23 More than one person should not work in a bucket when engaged in line-clearance operations or when working near overhead electrical conductors.

5.3 Brush Chippers

5.3.1 All brush chippers shall be equipped with a locking device on the ignition system to prevent unauthorized starting of the equipment. The ignition key shall be removed when the chipper is unattended.

5.3.2 Access panels for maintenance and adjustment shall be closed and secured prior to operation.

5.3.3 Each brush chipper shall be equipped with an infeed hopper of sufficient length so as to prevent personnel from contacting the blades or knives of the machine during normal operation.

5.3.4 Trailer chippers detached from trucks shall be chocked or otherwise secured.

5.3.5 The operator and workers in the immediate area shall wear eye protectors, in accordance with 3.2.4.

5.4 Sprayers and Related Equipment

5.4.1 Working and walking surfaces of all sprayers and related equipment shall be covered with skid-resistant material.

5.4.2 Equipment on which workers stand and spray from while the vehicle is in motion shall be equipped with guardrailing around the working area. The guardrailings shall be constructed in accordance with American National Standard Safety Requirements for Floor and Wall Openings, Railings, and Toe Boards, A12.1-1967.

5.4.3 Personal cleanliness and clean clothing for workers operating spraying equipment are recommended.

5.4.4 Respiratory protective equipment shall be worn where required in accordance with the manufacturer's recommendations while handling and spraying toxic materials, in accordance with 3.2.3.

5.4.5 Strict adherence to the manufacturer's recommendations on the storage, use, and disposal of each particular spraying powder or liquid and its container is essential.

5.4.6 Workers wearing clothing soaked with combustible liquid or on which combustible liquid has been spilled shall avoid open flame.

5.5 Stump Cutters

5.5.1 Stump cutters shall be equipped with appropriate enclosures or guards to protect the operator.

5.5.2 The operator and workers in the immediate area shall wear eye protectors, in accordance with 3.2.4.

5.6 Trucks

5.6.1 A steel bulkhead or equivalent protection shall be provided to protect the occupants of vehicles from load shifts.

5.6.2 Logs or brush shall be loaded onto trucks in such a manner as not to obscure taillights or brake lights and vision, or to overhang the side. Logs and brush shall be secured. Red flags shall be placed on the ends of the brush or logs when they extend beyond the confines of the truck.

5.6.3 Wood chips should not be left in trucks for extended periods because of spontaneous combustion hazard.

5.7 Log Loaders, Tree Cranes, and Related Hoists

5.7.1 Tree cranes operated by qualified line-clearance personnel working with the knowledge and approval of the system operator/owner and using a nonmetallic drop line may be permitted to operate closer than 10 feet to electrical conductors. However, the boom shall be kept at least 6 feet from all electrical conductors at all times.

5.7.2 A substantial and durable rating chart with clearly legible letters and numbers shall be provided for each crane or similar equipment and shall be securely fixed to a location easily visible from the control station or area. A full and complete range of manufacturer-approved crane loadings at all stated operating radii and boom angles shall be included on this chart as well as other pertinent data.

5.7.3 A boom-angle indicator shall be provided on all cranes.

5.7.4 All cranes and rigging shall be in compliance with American National Standard Safety Code for Crawler, Locomotive, and Truck Cranes, B30.5-1968.

5.7.5 An operator of hoisting equipment shall remain at the controls while a load is suspended.

5.7.6 Riding of loads is prohibited.

5.7.7 A daily visual inspection of wire ropes, gears, chain drives, and other parts shall be made by the operator, in accordance with the manufacturer's recommendations.

5.7.8 A durable and legible sign shall be placed conspicuously and shall contain the following wording or its equivalent: "Warning – Keep Clear of This Equipment When in Operation."

5.8 Off-the-Highway Equipment and Tracked Vehicles

5.8.1 Suitable protection for the operator from falling or shifting trees and branches should be provided on all vehicles when such hazards exist. Equipment used on steep grades shall be equipped with roll-over protection and safety seat belts.

5.8.2 Vehicles shall not be operated at speeds which will endanger the driver, workers, or traffic. Equipment shall be under control at all times and shall be kept in gear when descending grades.

5.8.3 Towing equipment for brush hogs and similar implements shall be equipped with a deadman control.

5.9 Digging and Ditching Equipment

5.9.1 The location of any underground utilities shall be determined before digging or ditching operations are begun.

6. Portable Power Hand Tool Safety Requirements

6.1 Portable Electric Power Tools

6.1.1 Electrical tools (except those that are self-powered) shall never be used in trees near an energized electrical conductor where there is a possibility of the supply cord or tool contacting the conductor, whether in an aerial lift or not.

6.1.2 All electrical tools and equipment having exposed noncurrent-carrying metal parts which are liable to become energized shall have an effective equipment ground, except for: 1) tools and equipment powered from an isolated power source (including batteries); and 2) double-insulated tools which are distinctly marked to indicate that they are double-insulated.

6.1.3 Extension cords shall be maintained in safe condition. Exposed metal sockets shall not be used.

6.1.4 Tool operators shall:

(1) Use electric hand tools in accordance with the manufacturer's instructions.

(2) Prevent cords from becoming entangled, damaged, or cut by blades and bits.

(3) Avoid laying extension cord in water.

6.2 Gasoline-Driven Power Saws

6.2.1 The manufacturer's operating and safety instructions shall be followed unless modified by this standard.

6.2.2 Power saws weighing more than 10 pounds (service weight) that are used in trees shall be supported by a separate line, except when working from an aerial lift device.

6.2.3 The operator shall have secure footing when starting the saw. The saw shall be firmly supported.

6.2.4 The engine shall be started and operated only when all co-workers are clear of the saw.

6.2.5 The engine shall ordinarily be stopped when carrying power saws. The saw need not be stopped between cuts when performing consecutive felling, bucking, or limbing-cutting operations on reasonably level ground. The chain shall not be turning and the hand shall be off the throttle lever while moving between work locations. One-man saws shall be carried to the side with the guide bar to the rear; two workers shall carry a two-man saw.

6.2.6 The engine shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor where practical, except where manufacturer's procedures require otherwise.

6.2.7 The saw muffler should be maintained in good condition.

6.2.8 The saw should be clean of sawdust and flammable material.

6.3 Backpack Power Units (Pruning, Clearing, Etc)

6.3.1 The manufacturer's operating safety instructions shall be followed unless modified by this standard.

6.3.2 No one except the operator shall be within 10 feet of the cutting head of the brush saw.

6.3.3 The power unit shall be equipped with a quick shutoff switch readily accessible to the operator.

6.3.4 The operator shall observe the position of all personnel while the unit is running.

6.3.5 The engine shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor where practical, except where manufacturer's procedures require otherwise.

7. Hand Tool Safety Requirements

7.1 General

7.1.1 The correct tool shall be selected for the job.

7.1.2 Tools which have been made unsafe by damage or defect shall not be used.

7.1.3 Tree trimmers shall not carry tools in their hands, other than pole pruners or pole saws, while climbing. Other tools shall be raised and lowered by means of a handline.

7.1.4 Workers shall maintain a safe working distance from other workers when using hand tools.

7.1.5 Tools shall be properly stored or placed in plain sight out of the immediate work area when not in use.

7.1.6 Workers shall not throw or drop tools from trees unless warning has been given and the ground area is clear, and the act of dropping will not endanger personnel.

7.2 Chopping Tools – Axes, Brush Hooks, Machetes, and Others

7.2.1 Chopping tools that have loose or cracked heads or splintered handles shall not be used.

7.3 Pruners and Saws

7.3.1 Pole pruners, pole saws, and other similar tools shall be equipped with wood or nonmetallic poles. Actuating cord shall be of nonconducting material.

7.3.2 When inserting a blade in a bow-saw frame, workers shall keep their hands and fingers in the clear when the tension lever snaps into or against the saw frame. When removing a bow-saw blade from the frame, the operator shall stay clear of the blade.

7.4 Injector Tools for Applying Herbicides

7.4.1 The bit shall be covered with a shield when not in use.

7.4.2 Injectors shall be laid flat on the ground when not in use.

7.4.3 The injector shall not be carried on the shoulders but shall be carried by the loop handle on the downhill side, with the bit properly shielded and facing to the rear.

7.4.4 The manufacturer's recommendations shall be used in handling chemical mixtures.

7.4.5 Workers shall have firm footing and shall clear all interfering limbs away before using the tool.

7.5 Grub Hoes, Mattocks, and Picks

7.5.1 The blade eye shall be tight-fitting and wedged so that it cannot slide down the handle.

7.5.2 When swinging grub hoes, mattocks, and picks, the worker shall have a secure grip and firm footing.

7.6 Cant Hooks, Cant Dogs, Tongs, and Carrying Bars

7.6.1 Hooks should be firmly set before applying pressure.

7.6.2 Tools with cracked, splintered, or weakened handles should not be used.

7.6.3 Workers shall be warned and shall be in the clear before logs are moved.

7.6.4 Points of hooks shall be at least 2 inches long and shall be kept sharp.

7.6.5 Workers shall stand to the rear and uphill when rolling logs.

7.7 Wedges, Chisels, and Gouges

7.7.1 Wedges and chisels shall be inspected for cracks and flaws before use.

7.7.2 They shall be properly pointed and tempered. Tools with mushroomed heads shall not be used.

7.7.3 Only wood, plastic, or soft-metal wedges shall be used with power saws.

7.7.4 Wood-handled chisels should be protected with a ferrule on the striking end.

7.8 Hammers, Mauls, and Sledges

7.8.1 Wood, rubber, or high-impact-plastic mauls or hammers should be used when striking wood-handled chisels or gouges.

7.9 Ropes

7.9.1 Safety- and climbing-ropes shall be used when working aloft in trees. These ropes should have a minimum diameter of 1/2 inch and should be 3- or 4-strand first-grade manila, with a nominal breaking strength of 2650 pounds, or its equivalent in strength and durability (see also 3.2.8).

7.9.2 Rope made unsafe by damage or defect, or for any other reason, shall not be used.

7.9.3 Rope shall be stored away from all cutting edges and sharp tools. Corrosive chemicals, gas, and oil shall be kept away from rope.

7.9.4 Rope shall be coiled and piled, or suspended, when stored, so that air can circulate through the coils.

7.9.5 Rope ends shall be secured to prevent unraveling.

7.9.6 Climbing- and safety-rope shall not be spliced to effect repair.

7.9.7 Safety snaps shall be rotated from one end of the rope to the other, as needed, and the worn end cut off.

7.10 Tackle Blocks and Pulleys

7.10.1 Tackle blocks and pulleys shall be inspected immediately before use and shall be condemned if defective, in accordance with procedures given in American National Standard Safety Code for Slings, B30.9-1971.

7.11 Ladders

7.11.1 Ladders made of metal or other conductive material shall not be used where an electrical hazard exists.

7.11.2 Only approved wood ladders (constructed in accordance with American National Standard Safety Code for Portable Wood Ladders, A14.1-1968, including Supplement A14.1a-1972), or nonconductive ladders made of synthetic material equal to or exceeding the strength of approved wood ladders, shall be used.

7.11.3 All ladders shall be inspected daily before use. Unsafe ladders shall not be used.

7.11.4 The attaching of cleats, metal points, and safety feet; lashing; or other effective means of securing the ladder, shall be used if there is danger of it slipping.

7.11.5 Ladders shall be supported while in storage so they will not sag. Except when on mobile equipment, ladders shall be stored under suitable cover, protected from the weather, and kept in a dry location away from excessive heat.

7.11.6 Ladders shall not be used as bridges or inclined planes to load or handle logs or other material.

7.12 Climbing-Spurs

7.12.1 Climbing-spurs shall be of the tree-climbing type and shall have gaffs of the type and length suitable for the tree being climbed.

8. Safe Work Procedures

8.1 Climbing

8.1.1 A tree worker shall be tied in with an approved type of climbing rope and safety saddle when working above the ground. The climbing rope shall always be used even when working from a ladder or scaffold. A safety strap or rope with snaps may be used for additional protection.

8.1.2 Limbs should be inspected, while climbing, before applying weight. The climber should not trust the capability of a dead branch to support his weight. Dead branches should be broken off on the way up, if possible. Hands and feet should be placed on separate limbs, if possible.

8.1.3 It is recommended that a worker not shin a tree that is taller than 15 feet or one that is beyond his physical capabilities. When the distance is over 25 feet, or is beyond the worker's physical capabilities, he should not climb (footlock) the rope, but should use a safety saddle or a sling.

8.1.4 The climbing rope should be passed around the trunk of the tree as high as possible using branches with a wide crotch to prevent any binding of the safety rope. The crotch selected for tying in should be over the work area as much as possible but located in such a way that a slip or fall would swing the worker away from any electrical conductor. The rope should also be passed around the main leader or an upright branch, using the limb as a stop. Feet, hands, and ropes should be kept out of tight-V-shaped crotches.

8.1.5 The location of all electrical conductors should be noted in relation to work procedures. The worker should climb on the side of the tree that is away from electrical conductors, if possible.

8.1.6 A figure-eight knot should be tied in the end of the rope, particularly in the case of high trees. This will prevent pulling the rope accidentally through the taut line-hitch and possible serious injury from a fall.

8.1.7 The climbing line must be crotched as soon as practicable after the worker is aloft, and a taut line-hitch tied and checked.

8.1.8 The worker must be completely secured with the climbing line before starting his operation.

8.1.9 The worker shall remain tied in until the work is completed and he has returned to the ground. If it is necessary to recrotch the rope in the tree, he shall retie in or use the safety strap before releasing the previous tie.

8.2 Pruning and Trimming

8.2.1 Pole pruners and pole saws shall be hung securely in a vertical position to prevent dislodging. Pole pruners or pole saws shall not be hung on utility wires or cables, or left in the tree overnight. Pole saws shall be hung so that the sharp edge is away from the worker, if possible.

8.2.2 A scabbard or sheath should be hooked to the belt or safety saddle to carry the handsaw when it is not in use.

8.2.3 Warnings, when necessary, shall be given by the worker in the tree before a limb is dropped. "Timber" or "heads up" are common terms used for this purpose.

8.2.4 A separate line should be attached to limbs which cannot be dropped or are too heavy to be controlled by hand. The line should be held by workers on the ground end of the rope. Use of the same crotch for both safety rope and work rope shall be avoided.

8.2.5 The safety line or climbing rope shall never be used for any purpose but climbing.

8.2.6 Cut branches should not be left in trees overnight.

8.2.7 A climbing rope shall never be left in a tree overnight. A service line should be put up for overnight or longer.

8.2.8 The climber should inspect his rope for cuts or abrasions before starting work. If any cuts or serious

abrasions are found, the rope should be discarded, used for some other purpose, or the defective section cut off.

8.2.9 During all tree working operations aloft, there shall be a second worker in the vicinity. This shall not apply to utility workers engaged in tree trimming incidental to their normal occupation, or to one-man service crews.

8.2.10 Chopping tools shall never be used while working aloft.

8.2.11 Chopping tools shall be swung away from the feet, legs, and body, using the minimum power practical for control.

8.2.12 Chopping tools shall not be driven as wedges or used to drive metal wedges.

8.3 Cabling

8.3.1 In cabling operations, branches which are to be cabled should be brought together to the proper distance by means of a block and tackle, a hand winch, a rope, or a rope with a come-along.

8.3.2 Usually not more than two persons should be in a tree working at opposite ends during cabling installation.

8.3.3 When releasing the block and tackle, workers in trees should be off to one side in case the lag hooks pull out under the strain.

8.3.4 Groundmen should not stand under the tree when cable is being installed.

8.3.5 Tools used for cabling, bark tracing, cavity work, etc, shall be carried in a bag or belt designed to hold tools, not put in the pockets or stuck in the top of a boot.

8.3.6 A handline shall be used for raising or lowering tools.

8.4 Topping

8.4.1 Workers doing topping should make sure the trees are able to stand the strain of a topping procedure. If not, some other means of lowering the branches should be provided, such as a tree crane.

8.4.2 If large limbs are lowered in sections, the worker in the tree should generally be above the limb being lowered.

8.4.3 Guidelines, handlines, or tag lines shall be used when conditions warrant their use.

8.5 Felling

8.5.1 Before beginning any felling operation, the worker shall carefully consider:

(1) The tree and the surrounding area for anything that may cause trouble when the tree falls

(2) The shape of the tree

(3) The lean of the tree

(4) Wind force and direction

(5) Decayed or other weak spots

(6) The location of other persons

8.5.2 The work area shall be cleared to permit safe working conditions, and an escape route shall be planned before any cutting is started.

8.5.3 Each tree worker shall be instructed as to exactly what he is to do. All workers not directly involved shall be kept clear.

8.5.4 A notch or backcut shall be used in felling trees over 5 inches diameter breast high. No tree shall be felled by "ripping" or "slicing" cuts.

8.5.4.1 The depth or penetration of the notch shall be about one-third the diameter of the tree.

8.5.4.2 The opening or height of the notch shall be about 2-1/2 inches for each foot in diameter of the tree.

8.5.4.3 The backcut shall be made higher than the point or apex of the notch to prevent kickback.

8.5.5 Just before the tree is ready to fall, an audible warning shall be given to those in the area. All personnel in the vicinity shall be safely out of range.

8.5.6 If there is danger that the trees being felled may fall the wrong way or damage property; wedges, block and tackle, rope, or wire cable (except where an electrical hazard exists) shall be used. All limbs shall be removed from trees to a height and width sufficient to allow the tree to fall clear of any wires and other objects in the vicinity.

8.5.7 Special precautions in roping rotten or split trees are important because they may fall in an unexpected direction even though the cut is made on the proper side.

8.5.8 Persons shall be kept back from the butt of a tree that is starting to fall.

8.6 Brush Removal and Chipping

8.6.1 Brush and logs should not be allowed to create a hazard at the work site.

8.6.2 All workers feeding brush into chippers shall wear eye protectors.

8.6.3 Brush chippers shall be fed from the side of the center line, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor. Chippers shall be fed from the curbside whenever practical.

8.6.4 Workers shall never place hands, arms, feet, legs, or any other part of the body on the feed table when the chipper is in operation or the rotor is turning. The chipper chute shall not be raised for repairs while the rotor is turning.

8.6.5 Foreign material such as stones, nails, sweepings, etc, shall not be fed into the chipper.

8.6.6 Loose clothing, gauntlet-type gloves, rings, and watches shall not be worn by workers feeding the chipper.

8.7 Limbing

8.7.1 Whenever it is possible to do so, the tree worker shall work on the side opposite from the side on which the limb is being cut.

8.7.2 The tree worker shall stand on the uphill side of the work whenever possible.

8.7.3 Branches bent under tension shall be considered hazardous.

8.8 Bucking

8.8.1 The tree worker shall work from the uphill side whenever possible.

8.8.2 The tree worker shall block the log to prevent rolling, when necessary.

8.8.3 When bucking up trunks of trees, wedges shall be used so that the tree will not bind the guide bar or chain.

9. Revision of American National Standards Referred to in This Document

When the following American National Standards referred to in this document are superseded by a revision approved by the American National Standards Institute, Inc, the revision shall apply:

American National Standard Safety Requirements for Floor and Wall Openings, Railings, and Toe Boards, A12.1-1967

American National Standard Safety Code for Portable Wood Ladders, A14.1-1968, including Supplement A14.1a-1972

American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms, A92.2-1969

American National Standard Safety Code for Crawler, Locomotive, and Truck Cranes, B30.5-1968

American National Standard Safety Code for Slings, B30.9-1971

American National Standard Manual on Uniform Traffic Control Devices for Streets and Highways, D6.1-1971

American National Standard Practice for Occupational and Educational Eye and Face Protection, Z87.1-1968

American National Standard Practices for Respiratory Protection, Z88.2-1969

American National Standard Safety Requirements for Industrial Head Protection, Z89.1-1969

American National Standard Safety Requirements for Industrial Protective Helmets for Electrical Workers, Class B, Z89.2-1971

Appendix

(This Appendix is not a part of American National Standard Safety Requirements for Tree Pruning, Trimming, Repairing, or Removal, Z133.1-1972, but is included for information purposes only.)

General Safety Procedures That Apply to all Tree Work

A1. Lifting

Before lifting any weight, the tree worker should:

(1) Be sure clear ground is available if the weight is to be carried from one place to another.

(2) Decide exactly how the object should be grasped to avoid sharp edges, slivers, splinters, or other things that might cause injury.

(3) Make a preliminary lift to be sure the load can be safely handled.

(4) Place feet solidly.

(5) Crouch as close to the load as possible with legs bent at an angle of about 90 degrees.

(6) Keep back as straight as possible. It may be far from vertical but should not be arched.

(7) Lift with the legs, not the back.

A2. Load-Handling

Loads should be handled by the use of skids and winch equipment; cutting logs into shorter lengths should be considered.

American National Standards

The standard in this booklet is one of nearly 4,500 standards approved to date by the American National Standards Institute, formerly the USA Standards Institute.

The Standards Institute provides the machinery for creating voluntary standards. It serves to eliminate duplication of standards activities and to weld conflicting standards into single, nationally accepted standards under the designation "American National Standards."

Each standard represents general agreement among maker, seller, and user groups as to the best current practice with regard to some specific problem. Thus the completed standards cut across the whole fabric of production, distribution, and consumption of goods and services. American National Standards, by reason of Institute procedures, reflect a national consensus of manufacturers, consumers, and scientific, technical, and professional organizations, and governmental agencies. The completed standards are used widely by industry and commerce and often by municipal, state, and federal governments.

The Standards Institute, under whose auspices this work is being done, is the United States clearinghouse and coordinating body for standards activity on the national level. It is a federation of trade associations, technical societies, professional groups, and consumer organizations. Some 1,000 companies are affiliated with the Institute as company members.

The American National Standards Institute is the United States member of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Pan American Standards Commission (COPANT). Through these channels American industry makes its position felt on the international level. American National Standards are on file in the libraries of the national standards bodies of more than 50 countries.

For a free list of all American National Standards, write:

American National Standards Institute, Inc

1430 Broadway **New York, N. Y. 10018**

ARBORICULTURE SPECIFICATIONS

Ontario Shade Tree Council

INDEX

1A. DEFINITIONS:

Approved - Acceptable to the authority having jurisdiction

Arborist - The arborist shall be qualified by experience and education to carry out and supervise all phases of the work under his supervision. Where there is no qualified arborist to represent the owner, the owner or any designated representative of the owmner may act in place of the arborist in approving extensions of the contract and in approving final work for payment. Under such circumstances, it is understood that the contractor will be looked to for professional advice on technical matters.

Contractor - Any firm capable of carrying out arboriculture work under the contract documents, applicable bylaws, Provincial and Federal laws and consistent with the standards set down in the specifications.

Danger Zone - The surface area in which there is a possibility of limbs, branches, or tools falling from a tree during arboriculture work.

Electrical Conductor - Any overhead or underground electrical device, including communications wire, cables, power lines, transformers, switches and all like installations.

Fall area - The ground surface area in which there is danger of or part of a tree falling during any pruning, limb removal or tree felling operation.

Groundsman - Any workman engaged in on-the-ground tasks associated with arboricultural work.

Qualified Personnel - Any worker who, be reason of his training and experience, has demonstrated his ability to safely perform his duties and, where required, Federal, Provincial and Municipal statutes bylaws and regulations.

Shall - A mandatory requirement.

Should - An advisory requirement

Striking Distance - The striking distance is equal to the longest dimension of any tree or limb being felled. The striking distance is measured horizontally from the base of the tree or limb being felled.

Sucker - Vigorous, vertically growing, secondary off-shoots generally sprouting from any part of a woody plant that has been disturbed.

Undergrowth - Any vegetation including flowers, turf, ground covers, shrubs, and other woody plants growing under trees.

Workman, Foreman, etc. - In all cases "he" shall mean "he" or "she", "workman" or shall mean "workman" or "workwoman", "Foreman" shall mean "foreman" or "forewoman". All terms in these specifications that imply one gender are intended to apply equally to both.

Feeding Area - The entire surface area under which a tree's roots have spread. On broadly branching trees the feeding area is generally marked by the outer limits of the foliage canopy.

FORM OF TENDER - 1B

Gentlemen:

Declaration

_____

(Name of Tenderer)

_____

(Full Address)

_____

(Telephone Number including Area Code)

The undersigned do, or does, hereby declare that the tenderer is:

(a) A Company duly incorporated under the laws of

_____

(Insert Authorizing Jurisdiction)

OR

(b) A Partnership carrying on business under the firm name and style above stated, the name of all partners being:

_____

_____

_____

(Strike out subclause (a) or (b), whichever does not apply.)

Does hereby tender and agree to perform and maintain all the works in conformity with and as described in the said Tender Documents and attached addenda, for the Total Tender Price of

_____ Dollars and _____ cents ($_____).

Documents

We have examined the documents listed below and the invitation to submit tenders, and are fully informed as to the nature of the contract and the conditions relating to the work.

(a) Special Commercial Conditions

(b) Standard Commercial Conditions

(c) Detailed arboriculture requirements and specifications

(d) Form of Tender including Unit Price Schedule attachment when required.

(e)

Addendum	Dated	Date Received
No _____	_____	_____
No _____	_____	_____

The above addenda have been received and considered in this tender.

Proof of Ability

As required in Clause 1.4 - Proof of Ability, our experience, (financial status), are stated hereunder.

Experience Statement

Location	Brief Description of Contract	Dates From	Dates To	Contract Value

STREET TREE PLANTING STANDARDS

CITY OF SEATTLE BOARD OF PUBLIC WORKS

GENERAL

These standards supplement the Street Use Ordinance No. 90047, Section 35, which relates to planting trees and shrubs in public places, and which prohibits planting Oregon maple, Lombardy poplar, cottonwood or other trees whose roots may damage sewers, sidewalks or pavements.

The Street Use Ordinance further provides that trees cannot be planted on street property without securing a Street Use Permit. Permits may be obtained from the Permit Section of the City Engineering Department, which may forward the application to the Board of Public Works for approval.

TYPES OF STREET TREES

The City of Seattle has installed street tree plantings on many of its arterial streets and some of its neighborhood streets, and plans further plantings. In these plantings, portions of a street or neighborhood are planted to trees of one variety or species. When older trees of non-conforming varieties on such a street or area are replaced with young trees, only replacement trees of the same kind as the predominant variety will be allowed.

In areas where trees planted are of mixed varieties, trees may be of any variety except those prohibited by ordinance. To guide the choice, the City has prepared lists of recommended trees, as well as a list of trees not recommended or recommended with reservations. This 1976 list will be updated and revised from time to time, and is available at the Engineering Department's Permit Counter, 5th floor, Seattle Municipal Building, or from the City Arborist. The list recommends trees in three categories: small or narrow trees, medium sized trees, and large boulevard trees. Required spacing of the trees varies with the type tree (see Spacing Requirements, following). For streets with narrow planting strips, or closely against tall buildings, columnar or narrow trees from the small and medium list may be the best selection; large boulevard trees with greater spacing may be appropriate where the planting strip or sidewalk is broad enough to accomodate them and where buildings and signs are not close enough that the tree will be ill-shaped or conflicting. Trees to be planted in tubs or containers in street area will best be chosen from more durable trees in the small or narrow list, as well as appropriate conifers and broadleaf evergreens such as arborvitae, alpine fir, yew, boxwood, privet, etc. Other trees, not shown on the recommended list, and trees on the "Approved with Reservations" list, may be planted in street area if approved by the City Arborist or his representative.

SPACING REQUIREMENTS AND RESTRICTIONS

All tree spacing may be made subject to special site conditions which may (for safety, for example) critically impact the decision. Any such proposed special conditions shall be subject to Board of Public Works Review with written explanation to the Board as to why they are requested.

1. Trees from the small or narrow trees list may be spaced at any interval 20 feet apart or greater.
   Trees from the medium-sized list may be spaced at intervals 30 feet or greater.
   Trees from the large boulevard tree list may be spaced at any interval 40 feet or greater.

2. Trees shall not be planted closer than 30 feet from the curb line of intersections, nor closer than 5 feet from alley margins, private driveways (measured at the back edge of the sidewalk), fire hydrants, or utility poles. No new utility pole location shall be established closer than 5 feet to any existing street tree. Tree pits shall be planned so as not to include premise services (water and gas meters, etc.) in the tree pit. Premise services shall not in the future be installed in existing tree pit areas.

3. As basic policy, street trees shall not be planted closer than 20 feet to light standards. Under conditions of adequate street lighting, street trees sometimes may be planted as close as 15 feet to a light standard. Proposals for trees planted at the closer distance may be accepted if they have the concurrence of the Traffic Engineering Division of the Engineering Department, which shall evaluate the proposal for its compatibility with existing or currently planned street lighting. Where pedestrian lights are provided separately below tree level to light sidewalks, tree spacing may be considered which is closer than these minimums. No new street light standard location shall be positioned closer than 10 feet to any existing street tree, and preferably such locations will be at least 20 feet distant.

4. Trees shall not be planted closer than 2½ feet from the face of the cur under any circumstances. They may be planted at 2½ feet from the face of the curb if the following conditions exist:

   a. Through traffic is not immediately adjacent to the curb. (In instances where through traffic is immediately adjacent to the curb lane, trees shall not be planted closer than 3½ feet from the face of the curb.)

   b. There is no angle or back-in parking. These will require greater setbacks, up to 5 feet with back-in parking.

4. c. At least 5 feet of walking surface shall be provided behind the tree, at least 4 of which shall be permanent hard surface, which may be supplemented by one foot of bricks, paver blocks, tree grate, etc. In those cases where existing walk width cannot accomodate the 5-foot requirement, additional sidewalk width must be added within street right-of-way, otherwise the street tree planting cannot occur. In high activity areas of heavy sidewalk use, the City may use the special site condition clause to recommend alteration or denial of the proposed street tree planting.

5. Trees shall not be planted within two feet of any permanent hard surface paving or walkway. Space between the tree and such hard surface may be covered by non-permanent hard surfaces such as grates, bricks on sand, paver blocks, cobblestones, etc. This means that sidewalk cuts in concrete for tree planting shall be at least 4 x 4 feet to help allow for air and water into the root area.

6. Trees, as they grow, shall be pruned to provide at least 8 feet of clearance above sidewalks and 14 feet of clearance over street roadway surfaces (Ordinance 90047).

7. At least 24 hours before digging for any tree installation, call 684-5464 (MU2-KING) for utility locations. All companies with facilities which may conflict will locate their facilities.

REQUESTS FOR VARIANCE

No exceptions to the foregoing requirements and restrictions shall be made except with the express concurrence of the Board of Public Works. Any requests for variance must be presented in writing to the Board to be considered.

RECOMMENDED PLANTING PROCEDURE, TREE CARE

1. Dig a large tree pit, well larger than the root spread. For the best start for the tree, fill around the tree with the following soil mixture:
   a. 50% native soil - the soil dug out of the pit. Eventually, the tree has to grow in native soil, except trees in planters.
   b. 50% mixed planting soil, consisting of approximately equal parts of good loam, compost or old manure, and peat or leaf mold. This mixed planting soil contains fertilizing and moisture-holding ingredients that may help the young tree in its first few years.

2. If the subsoil is impervious, excavate one or two feet deeper and add a layer of coarse gravel. Better yet, if possible, devise a system to drain water away from the tree pit. Street trees cannot survive in saturated soil. In a few places in Seattle, a porous layer exists below a hardpan layer; in such cases an auger hole can be drilled to drain the tree pit.

RECOMMENDED PLANTING PROCEDURE, TREE CARE, Cont'd

3. All trees shall be securely staked or guyed until the roots become established (usually one to two seasons).

4. Responsibility for care and maintenance of trees shall be with permittee. Certain larger trees on the approved list can interfere with effective lighting of streets and sidewalks as they grow older if the lower limbs are not removed or thinned out. Owners of such trees will be expected to do such limb removal or thinning as the tree grows, to minimize such interference.

MEB:2-9-77

2. MINIMIM WORKING CREW

The Contractor must maintain on the job site at all times a minimum working crew of six men, four of whom shall be actively engaged in the pruning of the trees.

3. PRUNING

(a) General

1. The trees shall be pruned by the removal of all dead, diseased, broken and crossing branches.
2. Live branches shall be removed to maintain the natural shape and appearance of the tree. Mutilation and loss of characteristic shape of the tree shall be prohibited.
3. Selective removal of complete limb or limbs shall be performed rather than excessive clipping with pruners i.e. a "hedge trimming" effect shall be avoided.
4. A "Natural" or Drop-Crotch" technique shall be used when removing or shortening branches in the crown of the tree.
5. Saw and pruner cuts shall be flush with the parent limbs or trunk of the tree.
6. Limbs shall be pre-cut using a 3-cut technique to prevent splitting and stripping of bark. Ropes shall be used for lowering cut branches where necessary to prevent damage to trees, conductors, fences, cars and other property.
7. No "hangers" shall be left in the trees after pruning is completed.
8. All saw cuts more than one (1) inch in diameter shall be treated with a tree wound dressing containing the ethyl ester of alpha napthalene-acetic acid, and unhealed wounds resulting from improper pruning, storm damage, and previous operations shall be flush cut or cleaned up and given another application of tree wound dressing. If sap flow is such that treating with tree wound dressing is impossible, the wound shall be treated as soon as conditions permit.

9. All old stubs shall be removed and treated. All old scars shall be inspected and if not healing properly shall be retraced and treated.

10. The skirts on the tree shall be raised (where the top is sufficient to maintain balanced life) to a height of fourteen feet above the travelled portion of the street at the curb line.

11. Spurs or climbing irons shall never be used for climbing trees.

(b) SPECIFIC

Any tree large enough to support a trimmer shall be climbed and trimmed. It will not be deemed sufficient for the trimmer to remain on the ground and trim the trees with a pruning pole. Trees to be climbed are indicated by the term Total Trim (T.T.) under the "Prune" heading of the survey sheets.

1. Light Pruning

The removal of dead wood, suckers, crossed branches, and stubs up to one (1) inch in diameter.

2. Medium Pruning

The work will include all of item 1. (Light Pruning) plus branches and limbs up to four (4) inches in diameter. Wounds are to be treated with a tree paint containing napthanoleacetic acid.

3. Heavy Pruning

Work will include items 1 (Light) and 2. (Medium) above. Also includes the removal of limbs over four (4) inches in diameter when specified under the "Remarks" column of the tree survey sheets.

At the time of pruning, the field supervisor may direct the removal of extra limbs.

Items 1, 2 and 3 will include topping (drop crotching, pollarding), trace and paint, treatment for girdling roots, installation of pressure release tubes or drains, installation of supporting cables and/or bolting and sectional cavity repair work when specifically listed

3. Heavy Pruning (cont'd)

under the "Remarks" column of the tree survey sheets.

4. Shaping

If in obtaining the desired shape, trees are rendered unsightly due to lack of symmetry, further pruning to restore their appearance shall be carried out. The extent of such shaping shall be governed by the location and type of tree, the nature of their surroundings, etc. Full shaping shall consist of:

(a) The removal or shortening by natural or "Drop-crotch" method of branches in crown of the tree. Sufficient growth must be left on a cut back branch to keep it alive and when possible the branch being shortened shall be cut back far enough to preserve the natural appearance of the tree.

(b) "Hedge-pruning" or excessive clipping with pruners shall be prohibited and "V" or "U" shape openings in the crown shall be reduced to a minimum consistent with the species of tree involved.

(c) Side pruning shall be performed to reduce straggly branches and to eliminate or reduce to a minimum, any gouged effect.

(d) Pruning shall not be so severe as to restrict the tree's ability to produce the food necessary for healthy growth. Top-growth shall not be reduced a greater amount than that permissable for the species as listed below:-

50% Soft Maple, Willow, Poplar and other fast growing varieties

40% Basswood, Elm, Walnut, Ash & Chestnut

15%-20% Beech, Hard Maple and other slow growing species.

5. Circuits and Apparatus Clearance

(a) Any line clearing operation shall provide adequate clearance for all power and communications circuits, including primary service leads, as well as strain and anchor guys attached to the poles or structures of the line.

Note: In general, lines are designated by the highest voltage carried on the structures.

(b) Limbs under conductors

Limbs growing up into the conductors from the side of a tree shall be removed at the main trunk. If this appears impracticable,

(b) Limbs under Conductors (Cont'd)

or inadvisable, the limbs shall be shortened to avoid whipping up into the line.

(c) Limbs Parallel with Conductors

Limbs that are growing out from the side of a tree, parallel with conductors, and could sway or blow into the conductors, shall be removed if it is practicable to do so; otherwise they shall be shortened.

(d) Overhanging Limbs

Limbs directly over the conductors shall be removed if practicable; otherwise they shall be shortened sufficiently to prevent their dropping into the conductors under the additional weight of snow or ice.

(e) Dead Limbs

All dead wood in trees shall be removed.

6. Minimum Line Clearance

(a) Major Operations

Clearance shall provide for at least two years growth except where this would result in a serious mutilation of the tree. All limbs, either sound or diseased, that are liable by falling, swaying or by other means to contact the conductor, shall be removed where it is practicable to so. Although strain and anchor guys do not require as much clearance as live conductors, they must be protected against the possibility of dead limbs and hazardous trees falling on them and sufficient clearance must be provided to avoid the chaffing of tree branches.

(b) Children Climbing

In establishing clearances, the possibility of children climbing trees and contacting live conductors must always be borne in mind and particular caution shall be exercised regarding trees on or near school yards and playground areas. Where adequate clearance cannot be obtained without mutilating the tree, and if permission cannot be obtained to remove it, the condition shall be reported at once in writing to the Commissioner of Parks & Recreation

7. Cabling

Cabling, which shall be resorted to only when hazards cannot be eliminated by pruning or removals, shall be installed as directed.

8. Guys

Guys to provide support for trees shall not be installed except when specifically authorized under the "Remarks" column of the Tree Survey Sheets.

9. Trees of Doubtful Strength

(a) Reporting

All trees of doubtful strength that in falling could be dangerous to persons and property shall be reported to the contract supervisor. These shall include all trees that are over mature, diseased or showing signs of decay.

(b) Diagnosis

Trees of doubtful strength shall be bored at the base with a ½" auger to determine the amount of sound wood. At least three borings are to be made. Borings shall also be made in the wood surrounding doubtful areas in the trunk or main branches as may be indicated by exposed wood, frost, cracks, bulges, sunken areas, etc.

(c) Test Holes to be Plugged.

Test holes in all trees left standing following diagnosis shall be plugged with wooden dowel pins after first reaming the bark around the holes with a jack knife. The end of the dowel shall be flush with the wood edge and the wound treated with tree wound dressing.

10. Tree Removals

(a) General

Provided that permission is obtained from the Commissioner of Parks & Recreation or his duly authorized representative, the following trees shall be removed:-

(a) Trees, that if pruned to provide adequate line clearance would be mutilated to the extent of becoming unsightly.

(b) Trees that are already mutilated and unsightly as a result of unwise pruning in the past.

(c) Dead Trees.

(d) Diseased trees deemed to be an immediate hazard.

(e) Leaning trees, to include those leaning towards or parallel

Tree Removals (Cont'd)

with power lines.

(f) Trees with exposed or shallow root systems.

(g) Trees growing in swampy areas or on sloping and eroding banks.

NOTE: Trees which in falling would be a hazard to power or communication lines or neighbouring property, shall be suitably roped to prevent damage. In cases of extremely dangerous removals, trees shall be removed in sections if this can be done safely; otherwise a request shall be made to have power lines de-energized.

11. Preparation of Tender

For the purpose of computing pruning bids the attached Tree Survey list approximates the overall diameter of all listed trees, fifty-four (54") inches obove the ground. Verification of the diameter measurements taken at a point fifty-four inches above ground on the trunk shall be the responsibility of the contractor and any vaiance shall be brought to the attention of the Commissioner of Parks & Recreation or his authorized representative. Quotations shall include all labour and equipment necessary to perform the work in accordance with the attached specifications and to the entire satisfaction of the Commissioner of Parks & Recreation.
The cost of pruning of the trees listed shall be shown on the Form of Tender, Paragraph A.

12. Cleanup & disposal of Brush & debris

The Contractor shall be responsible for the removal of all brush, limbs, chips and debris to a Landfill or disposal area as approved by the Commissioner of Parks & Recreation and all work areas shall be left in a clean and tidy, safe condition at the close of each daily working period. Further, it is expressly understood that no diseased timbers shall be salvaged and used for commercial purposes by the contractor and all timbers and materials delivered to the landfill shall be no longer than four feet in length and shall conform to the regulations prevailing at the landfill sites.

13. Department of labour regulations

The contractor shall comply with all of the regulations of the Ontario department of Labour as they affect the scope of work, safety regulations, wearing apparel, hours of work, working conditions and any other item affecting the work.

14. Workmen's compensation - Statutory

Owner's Protective Public Liability and Property damage-- protects the City and terminates with the acceptance of work by the Commissioner of Parks & Recreation. Public Liability insurance in an amount not less than $250,000.00 for injuries, including accidental death of any one person and subject to the same limit for each person in an amount not less than $500,000.00 for one accident and property damage insurance in an amount not less than $250,000.00 for each accident and an aggregate of $250,000.00 for all accidents.

The Contractor will make no charge or claim whatsoever, for hinderance or delay of the work from any cause during the progress of the same except a claim for an extension of time provided in the contract for completion of the work. Such claim shall be made in writing to the Commissioner of Parks & Recreation within ten (10) days after a happening of the event or occasion causing such delay or hindrance and the time lost by reason thereof.

Such claim must be concurred in by the Bonding Company issuing the Performance Bond.

15. Protection of property from damage

The Contractor shall protect existing public and private property including sidewalks, driveways, houses, existing desirable trees, shrubbery, lawns, retaining walls, fences, gates, utility wires, etc. Any damage to such property by his employees or equipment shall be restores to its original condition and he shall pay the cost of any work, material required in the repairing or replacement of any item so damaged. All accidents where damage to property takes place must be reported in triplicate on forms supplied by the Corporation. Such reports shall contain a full description and account of the damaged area and shall be signed by the contractor. This work must be entirely completed to the satisfaction of the Commissioner of Parks & Recreation before the Final Payment to the contractor is approved by the Commissioner.

16. Traffic control

The Contractor shall be required to maintain traffic, detours, barricades, safety lanterns, etc., for the information and general safety of the public. The Contractor shall not stop or detour traffic without the approval of the Commissioner of Parks & Recreation. Before stopping traffic and creating any detour, the Contractor shall contact the Engineering Department of the City of Windsor and the City of Windsor Police Department, the Fire Department, Local Ambulance, S.W. & A. Bus Co. and notify those Departments of his desire to detour or stop traffic. The Contractor shall provide and pay for all necessary signs, warning lanterns, flagmen, watchmen, maintenance of the detours, and shall make good any repairs on any streets where he had detoured traffic and damage to the said streets has been sustained on account of such detour. The Contractor shall not create any detour or stop any traffic if in the opinion of the Commissioner of Parks & Recreation deems that any detour or stopping of traffic is not required, the Contractor shall carry out the work without such action and he will not be allowed any additional remuneration on account of such decision by the Commissioner of Parks & Recreation.

17. The Contractor shall provide all necessary equipment and materials for the safety of the men working on the project, for traffic and for the safety of the public at large. The Contractor shall provide constant watching at all time whether work is in progress or not. If at any time, the Commissioner of Parks & Recreation deems that the work is not properly lighted, barricaded and watched in all respects to provide for the safety of the public, traffic, persons on or about the work or private property, the Commissioner of Parks & Recreation shall have the right to order such safeguards and such precautions taken as he deems advisable to correct this matter.

If the Contractor fails to provide proper safety precautions, watching lighting and any other requirement for the safety of the workmen and the public at large, the Commissioner of Parks & Recreation may direct that the work be suspended forthwith and such suspension shall remain in effect until the Contractor has taken proper remedies. Suspension of the work on this account, shall not entitle the Contractor to any extension of time of completion.

Traffic Control (Cont'd.)

18. Approval of contractor's equipment

All equipment used on the Contract shall meet with the approval of the Commissioner of Parks & Recreation. All equipment shall be transported to the site of the work on suitable pneumatic tiered carriers. Cleated vehicles will not be permitted to operate on existing pavements.

If, in the opinion of the Commissioner of Parks & Recreation, the Contractor is not using suitable equipment for the work, he may direct the Contractor to suspend operations forthwith and such suspension shall remain in effect until the Contractor has provided satisfactory equipment.

If the Contractor does not have sufficient equipment on the job in the opinion of the Commissioner of Parks & Recreation to carry out the work satisfactorily, the Commissioner of Parks & Recreation may direct the Contractor to supply additional equipment immediately or the Commissioner of Parks & Recreation may suspend the work forthwith. Any suspension of the work by the Commissioner of Parks & Recreation on account of improper equipment or lack of equipment to carry out the work satisfactorily, shall not entitle the Contractor to an extension of the Time of Completion and he shall remain liable for any liquidating damages caused by his failure to complete the Contract within the time specified.

19. Fair Wage Clause

The Contractor shall pay or cause to be paid to all mechanics, workmen and labourers employed by him in the execution of this Contract, the prevailing union rate of wages in force at the date of and during the continuation of this Contract and the mechanics, workmen and labourers shall be paid at least bi-monthly by the Contractor.

F. Methods of Payment

The Contractor shall be paid monthly upon submission of invoices for each 30 day period. All claims by the Contractor shall be completed in triplicate and shall have attached a detailed list which includes the following information:

TREE TRIMMING SPECIFICATIONS

I. DESCRIPTION OF WORK

The work to be done consists of trimming trees and disposing of trimmings and debris resulting therefrom; as specified herein and as indicated on the accompanying ( ) list ( ) plan ( ) sketch.

II. LOCATION

The trees to be trimmed are located . . . . . .

III. STANDARDS OF WORKMANSHIP

A. Conduct of Operation

1. Cooperation with Others - The work shall be conducted in such a manner as to cause the least possible interference with, or annoyance to, others. When the work herein specified would interfere with work already started by others, the Contractor shall make arrangements mutually satisfactory to all concerned.

2. Supervision - A qualified foreman shall be present at all times when work is being performed except that he may be absent for short periods during the day when necessary because of emergencies or other urgent matters.

3. Storage - The Contractor shall make his own arrangements for the storage of his tools, materials, and equipment; and shall assume all costs accruing therefrom.

4. Inclement Weather - Work in trees shall be suspended during inclement weather.

5. Preservation of Property - Attention is directed to . . . . . .
. . . . . .
. . . . . .
relating to financial responsibility and the Contractor's liability for personal injury and property damage. Tree limbs shall be removed and controlled in such a manner as to cause no damage to other parts of the tree, or to other plants or property.

6. Traffic Control - Attention is directed to . . . . . .
. . . . . .
. . . . . .
relating to financial responsibility and the Contractor's liability for personal injury and property damage. Pedestrian and vehicular traffic shall be allowed to pass through the work area only under conditions of safety and with as little inconvenience and delay as possible. Adequate barricades and warning devices shall be placed and flagmen shall be stationed as necessary for the safety of persons and vehicles.

7 Removal of Brush and Debris - All trimmings and debris resulting from tree trimming work shall be promptly removed from the work site and properly disposed of All laws, ordinances, etc., applicable to the involved locality governing such disposal shall be fully complied with.

8 Final Cleaning Up - Upon completion of the trimming of each separate tree or group of trees, the area shall be cleaned to a condition at least equal to that which existed when the trimming was started. Undergrowth and adjacent growth shrubbery or trees sustaining broken branches or other injury due to the Contractor's operations shall receive corrective treatment. Disposal of debris resulting from final cleaning up shall be performed in the same manner as the disposal of other trimmings and debris hereinbefore detailed.

B Tools and Clothing

1 Cutting tools and saws shall be kept sharpened to a condition that will permit leaving an unabraised cambium edge on final cuts and bark tracings.

2 The use of climbing spurs or spike shoes will not be permitted.

3. Workmen shall not be allowed to wear shoes or boots with leather soles and heels when working in thin barked trees.

C. Final Pruning Cuts

1. Final pruning cuts shall be made without leaving a stub. They shall be made in a manner to favor the earliest possible covering of the wound by callus growth. This requires that the wound be as small as practicable; the cut be reasonably flush and within the shoulder ring area; and that the cambial tissues at the edge of the cut be alive and healthy. Extremely flush cuts which produce large wounds and weaken the tree at the cut shall not be made.

D. Treatment of Pruning Cuts

1. When the type of tree trimming designated is a "complete trim" all pruning cuts both old and new which are over one inch in diameter, and all other wounds not covered by live bark, shall be painted with an approved pruning compound. When the type of trimming designated is a "head back or safety trim", a "minimum trim", or a "spot trim" painting shall be limited to new pruning cuts two inches or over in diameter.

2 Contrary to the above, when necessary to avoid the spread of a recognized infectious disease, pruning wounds shall be left unpainted. In lieu thereof, pruning tools as well as cut surfaces shall be disinfected as prescribed for the disease involved.

IV. TYPES OF TRIMMING

A. Complete Trim

1. Description of Complete Trim - A complete trim consists of the removal of such dead or living branches as may menace the future health, strength, and beauty of the tree.

2. Specifications for Complete Trim

   a. All work shall comply with the standards of workmanship hereinbefore detailed. Particular attention is directed to the paragraph relating to final pruning cuts.

   b. Remove all dead branches ½ inch and over in diameter.

   c. Remove all dead and live stubs ½ inch and over in diameter.

   d. Remove all mistletoe.

   e. Remove all broken branches, all loose branches, and accumulation of loose bark, twigs and other debris lodged in the tree.

   f. Remove all live branches which interfere with the tree's structural strength and healthful development. These include:

      (1) Limbs which rub and abrase a more important branch.

      (2) Limbs of weak structure which are not important to the framework of the tree.

      (3) Limbs which if allowed to grow would wedge apart the junction of more important branches.

      (4) Limbs with twigs and foliage obstructing the development of more important branches.

      (5) Limbs forming multiple leaders in a single leader type tree.

      (6) Branches near the end of a limb which produce more weight than the limb is likely to support.

      (7) Undesirable sucker growth.

g. Remove live limbs wherever such removal will be helpful in reestablishing the natural framework and form of the species involved. This includes:

(1) Selective removal to one or more strong developing leaders, the multiple growth near the end of stubs produced by previous topping.

(2) Removal of branches which present an ungainly appearance by extending too far outward of an otherwise symmetrical form

h. Removal (or if embedded, sever) girdling roots which presently or potentially restrict expansion of the base of the tree trunk.

i. Perform other work as indicated on the accompanying ( ) list ( ) sketch ( ) plan.

B. Minimum or Safety Trim

1. Description of Minimum or Safety Trim - Minimum or safety trim means a tree trimming operation in which the minimum amount of pruning is performed to moderate one or more extreme and undesirable conditions.

2. Specifications for Minimum or Safety Trim -

a. All work shall comply with the Standards of Workmanship hereinbefore detailed. Particular attention is directed to the paragraph relating to final pruning cuts.

b. Remove all dead branches 2 inches or more in diameter.

c. Remove all broken branches 2 inches or more in diameter.

d. Shorten the length of limbs which extend extremely beyond the perimeter of an otherwise symmetrical form.

e. Prune end branches to lighten extreme end weight where such overburden appears likely to cause breakage of limbs 4 inches or more in diameter.

f. In addition to the foregoing remove other branches as specified on the accompanying ( ) list ( ) plan ( ) sketch

C Head Back Trim

1 Description - Head back trim consists of reducing the height and/or spread of a tree by not more than one third

Head back trim is performed by a method called "drop crotch" pruning which permits the preservation of a natural appearing foliage margin.

Drop crotch pruning consists of removing perimeter branches at their junction with shorter branches. The shorter branches are retained intact to form a new foliage margin at the specified height and/or spread.

2. Specifications for Head Back Trim -

a. Trimming shall be performed in accordance with the description hereinbefore given for Head Back Trim, and shall comply with the Standards of Workmanship hereinbefore detailed. Particular attention is directed to the paragraph relating to final pruning cuts.

b. Head Back trimming shall be performed on such trees and in the amount indicated or the accompanying ( ) list ( ) plan ( ) sketch

D. Spot Trim

1. Description - Spot trim applies to the removal of one or more branches localized to a particular area of the crown.

2. Specifications for Spot Trim -

a. Spot trimming shall comply with the standards of workmanship hereinbefore detailed. Particular attention is directed to the paragraph relating to final pruning cuts.

b. Spot trimming shall be performed as indicated on the accompanying ( ) list ( ) plan ( ) sketch.

APPENDIX 70.

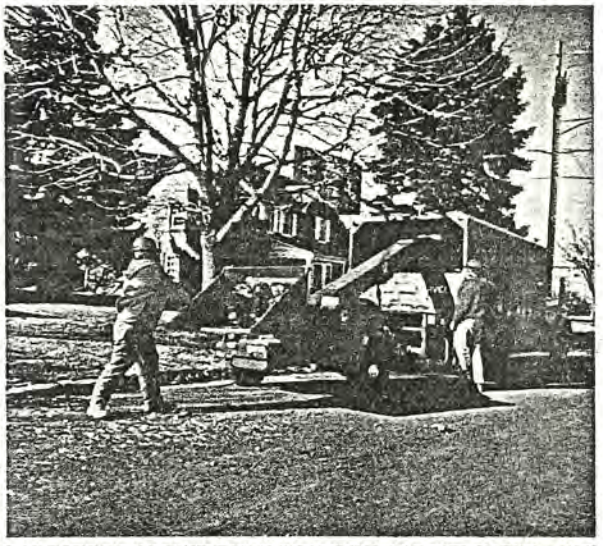
Examples of Modern Tools
and Equipment used in
Municipal Aboriculture

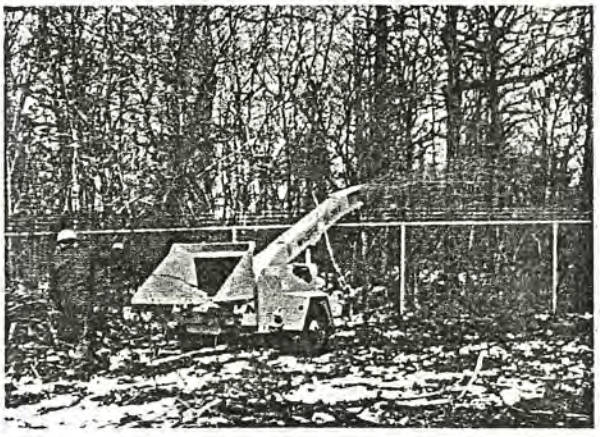
ASPLUNDH

The Asplundh Manufacturing Division presents four models of the famous

Whisper Chipper®

Fourteen special features included as standard equipment





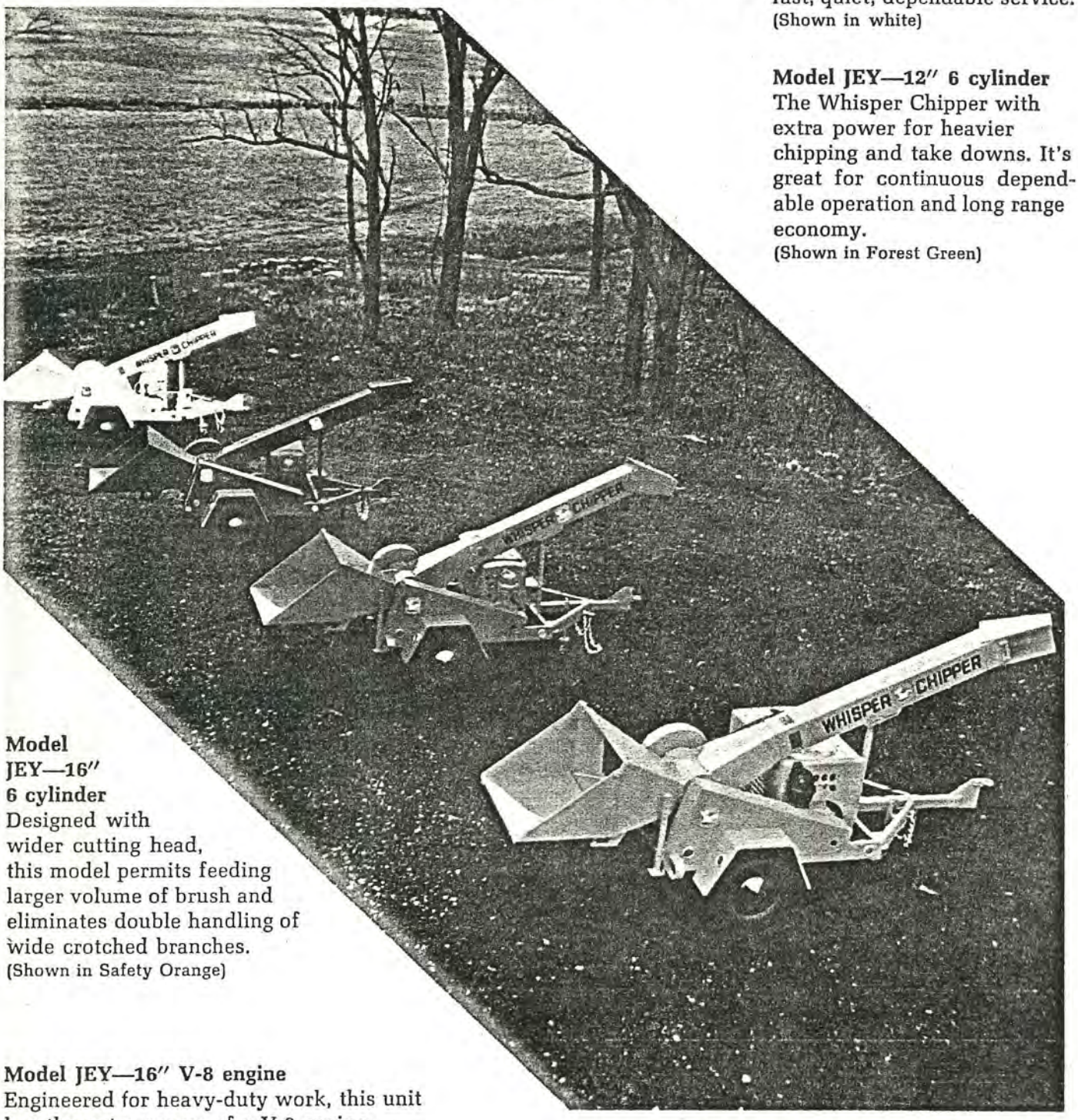
It's quiet ☐ It's efficient ☐ It's safe ☐ It's economical

With the world's finest wood chipper... you have a choice

4 Whisper Chipper® Models with exclusive design and engineering improvements

Model JEY—12″ 4 cylinder
The standard Whisper Chipper for use in line clearance and tree trimming service. It is preferred by professionals for fast, quiet, dependable service.
(Shown in white)

Model JEY—12″ 6 cylinder
The Whisper Chipper with extra power for heavier chipping and take downs. It's great for continuous dependable operation and long range economy.
(Shown in Forest Green)

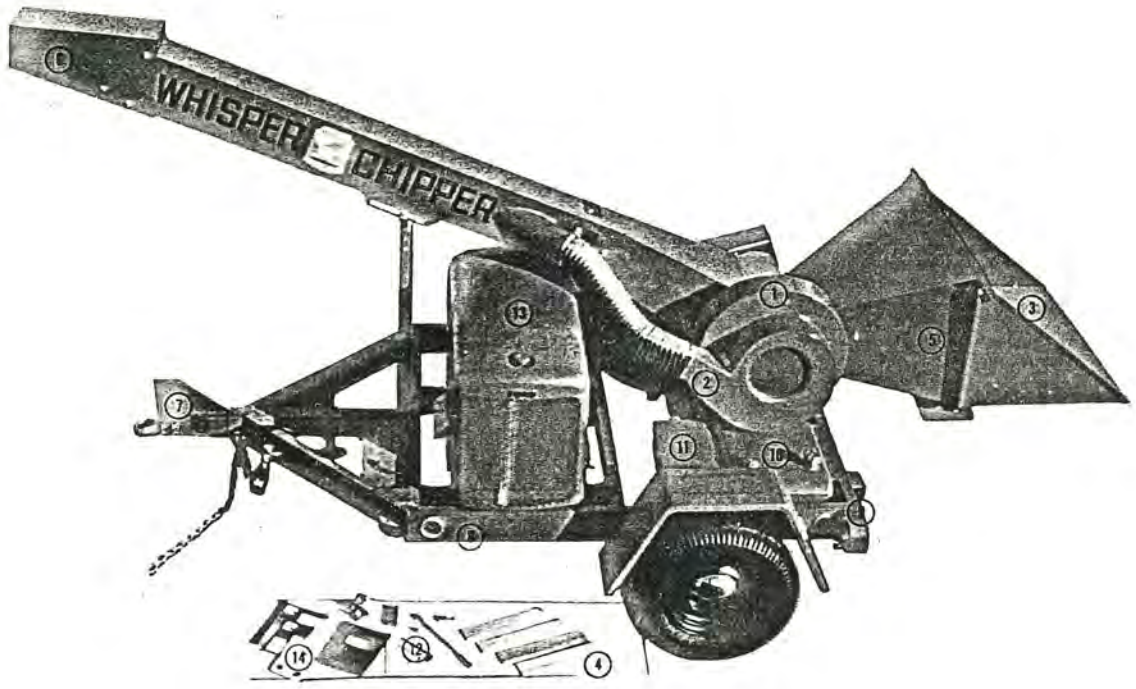


Model JEY—16″ 6 cylinder
Designed with wider cutting head, this model permits feeding larger volume of brush and eliminates double handling of wide crotched branches.
(Shown in Safety Orange)

Model JEY—16″ V-8 engine
Engineered for heavy-duty work, this unit has the extra power of a V-8 engine. Popular with contractors and municipalities for handling large volumes of brush daily.
(Shown in Highway Yellow)

Photograph also shows some other choices—Different positions of chip exhaust bonnet, length of drawbar, height of towing eye.

14 Big Special Features Included as standard



1. Steel Flywheel for uniform chipping speed.

2. Blower for fast discharge of material under all operating conditions.

3. Folding Feed Table on Extended Housing to allow feeding of bulky brush from a safe distance, folds up for safety in travel.

4. Extra Set of Blades four (4) super chip (high carbon-high chrome).

5. Rubber Shroud in hopper to protect operator from dust and stray chips.

6. Adjustable Bonnet for changing exhaust of chips to right, left, or straight ahead, with four angles of deflection.

7. Adjustable Drawbar, telescoping for distance from truck, towing eye adjustable for height.

8. Heavy Duty Frame 6″ structural channel with 5200 lb. capacity axle & 7.00x15 8 ply rating tires.

9. Complete Lighting running lights, stop and turn signals and reflectors complete per DOT specifications.

10. Heavy Duty Gas Tank 22 gal. FHWA certified, with gauge.

11. Steel Tool Box and Battery Box with hasp and eye for locking.

12. Service Tools including wrenches, sharpening stone, and light connector for truck.

13. Paint sheet metal dip tank treated, primed, and finish coat spray. Color of your choice.

14. Full Year Warranty on chipper unit—standard manufacturers warranty on other components such as engine, tires, battery, etc.

PLUS the quiet operation of the WHISPER CHIPPER engineered to operate in communities where noise level must be limited. The model 12″ 4 cyl. JEY has readings of approximately 73 to 77 decibels at 50 ft. Other models vary, and noise level while chipping depends on material being chipped.

Reasons why Asplundh outsells other chippers

Efficiency

High speed, self feeding, it chips all types of wood up to firewood sizes. Many adjustable features.

Durability

Many Asplundh chippers 20 years and older are still operating. Most parts are still available for these older units. Maintains high re-sale value.

Economy

By eliminating costly labor, extra trips to the dump, and producing salable chips, it pays for itself in a short time. Parts and service readily available at low cost.

Extras

Many features included as standard equipment (see list of 14). Additional items available as options.

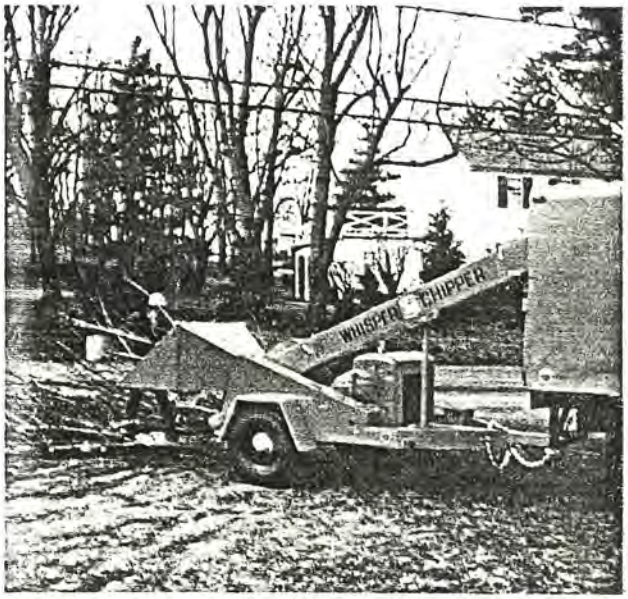
This generation of Whisper Chippers® is performance proven

Ends need for burning ☐ cuts removal time by 400% ☐ provides salable chips ☐ new quieter operation

Asplundh introduced the world's first wood chipper over 25 years ago. It was originally designed for the Asplundh Tree Expert Company, our parent company, and the world's largest line clearance company. Asplundh required a chipper with outstanding durability to operate in daily non-stop tree and brush trimming operations. It was engineered to drastically reduce loading, hauling and disposal time. Men were freed for more tree trimming time and the need for brush burning ended.

Over the years constant improvements have been made, based on the direct reports of actual operators within our own organization. Weak points were eliminated and new ideas added.

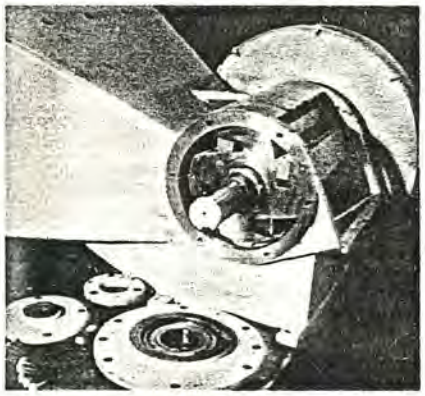
Ecology and air pollution controls greatly increased the demand for, and the value of, chippers. Others tried to imitate, but none could equal the famous Asplundh chipper. We are the one and only tree expert company



that designs, manufactures, sells, and uses its own chippers daily throughout the nation. Annually over two million hours of use are put on chippers by the Asplundh organization. They have to be rugged, reliable, efficient, safe and durable. And they provide the greatest proving ground in the world for trying new ideas and design. When the cry of "noise pollution" called for restriction of operation in residential or municipal areas, Asplundh, the pioneer, redesigned and tested to produce the newest generation of a long line of chippers—

THE WHISPER CHIPPER—MODEL JEY!

Specifications: Model JEY



CHIPPING UNIT

HOUSING:
Steel plate, weldment, w/removable abrasion resistant floor plate.

FEED OPENING:
12" model: 10" x 12".
16" model: 10" x 16".

CYLINDER MATERIAL:
Solid carbon steel casting, machined.

CYLINDER DIMENSIONS:
12" model: 11½" dia., 12" long.
16" model: 11½" dia., 16" long.
RPM, All cylinder sizes:
1900 to 1950 RPM.

SHAFT DIAMETER:
3"

BALL BEARINGS:
Single row self-contained, shielded, pre-lubricated.

BLADES, Set of 4:
Special steel, tapered.
Width and thickness: 3" x ⅜".
12" model — 12" long.
16" model — 16" long.

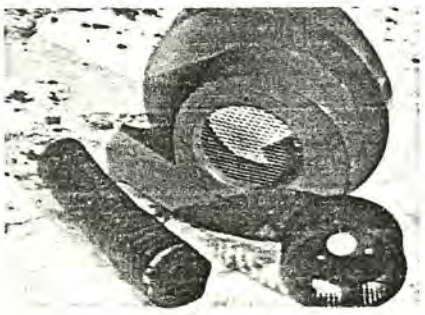
EXTRA BLADES:
An additional set of four (4) included.

CUTTER BAR, Adjustable:
Special steel. 4 usable edges
12" model: 1" x 1" x 11⅞".
16" model: 1" x 1" x 15⅞".

FLYWHEEL:
26" dia. x 3" steel plate.

FLYWHEEL GUARD:
27" x 6" spun steel.

BLOWER:



POWER UNIT

Of sufficient h.p. and torque for recommended operation.

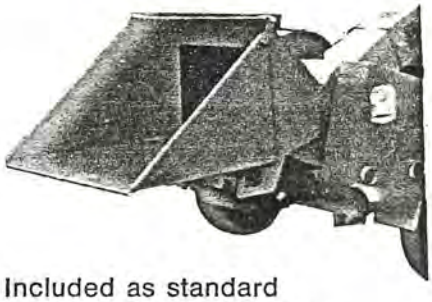
12" standard engine options
Choice of Ford 172 CID 4 cyl. or 300 CID 6 cyl.
16" standard engine options
Choice of Ford 300 CID 6 cyl. or 330 CID V-8.

OPTIONS

Upon request the following may be installed at the factory at an additional cost.

PARTIAL LIST:
TACHOMETER
HOUR METER
ENGINE CUT-OFF SWITCH AT REAR

EQUIPMENT



Included as standard equipment with all trailer models.

FOLDING FEED TABLE

(2) SHEAVES; (4) BELTS:
Matched set "C" section V-belts.

BELT GUARD:
Sheet metal, completely enclosing belts, and sheaves.

STRAIGHT CHUTE and ADJUSTABLE BONNET

TOOL BOX and TOOLS:
Allen wrenches, extension handle, carborundum stone, and operating manuals.

PAINTING:
To any one (1) color.

TRAILER

FRAME:
All steel, welded construction, 6" structural channel.

DRAW BAR: Telescoping.
Towing Eye attachment, adj. for height.

DROP STAND LANDING GEAR:
All models with wheel and caster folding, screw type.

AXLE:
2" x 2" x 74" — 5200 lbs. capacity.

SPRINGS:
2 each 6 leaf.

WHEELS:
2 each semi drop center. 15"
Tires, pneumatic truck type:
7:00 x 15 — 8 ply.

FENDERS & HUB CAPS
TAIL LIGHT, STOP LIGHT, TURN SIGNALS, LICENSE LIGHT,
REFLECTORS & 2 SAFETY CHAINS:
Complete as per DOT & ICC regulations.

OPTIONS

ELECTRIC BRAKES
BREAKAWAY SAFETY SWITCH
BALL COUPLER TOWBAR
FLASHING WARNING LIGHT
EMERGENCY FLYWHEEL BRAKE

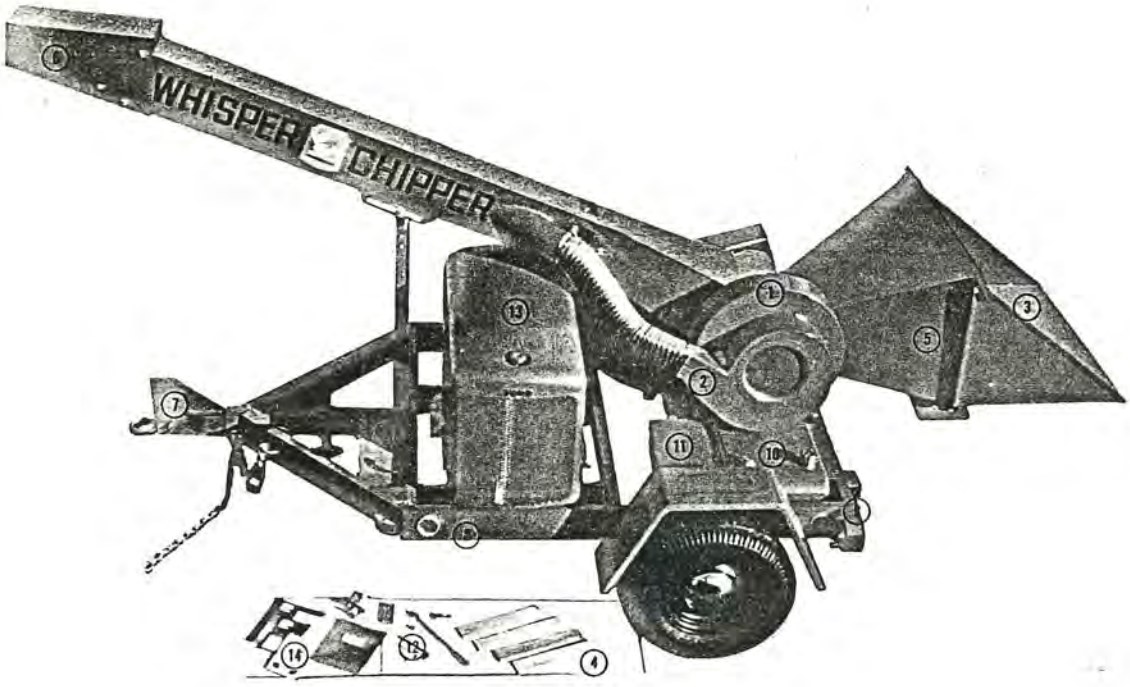
WEIGHTS

BASIC UNIT ONLY:
12" model: 1770 lbs.
16" model: 2300 lbs.

COMPLETE TRAILER:
12" model with 172 engine: 3615 lbs.
12" model with 300 engine: 3755 lbs.
16" model with 300 engine: 3870 lbs.
16" model with 330 engine: 4170 lbs.

ASPLUNDH

14 Big Special Features Included as standard



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PLUS the quiet operation of the WHISPER CHIPPER engineered to operate in communities where noise level must be limited. The model 12″ 4 cyl. JEY has readings of approximately 73 to 77 decibels at 50 ft. Other models vary, and noise level while chipping depends on material being chipped.

Asplundh knows chipping helps environment... burning hurts.

For further information contact your local dealer

ASPLUNDH

Manufacturing Division/Asplundh Tree Expert Co.
50 East Hamilton Street, Chalfont, Pennsylvania 18914

5000—677

Printed in U.S.A.

ASPLUNDH

LINE LIFTS — SINGLE OR DOUBLE BASKET

Floor Mount Models	Top Mount Models
LR-40	LR-40TM
LR-42	LR-42TM
LR-45	LR-45TM
LR-50	LR-50TM

Single Basket

ASPLUNDH

The dependable name in Line Lifts...

- Designed for one or two man operation
- Articulating overcenter upper boom
- Engineered for easy service
- Standard of the industry

Electrical system maintenance • overhead line construction • tree trimming and line clearance for utilities, municipalities, contractors, street and highway departments and general industry.

Model LR-45 with a built-in Asplundh Chipper, permits optimum efficiency in trimming trees.

Model LR-42TM equipped with jib boom and winch, streamlines the installation of transformers and other pole attachments.

ASPLUNDH LR Model Line Lifts

Industry's most accepted model—rugged, reliable, efficient, economical

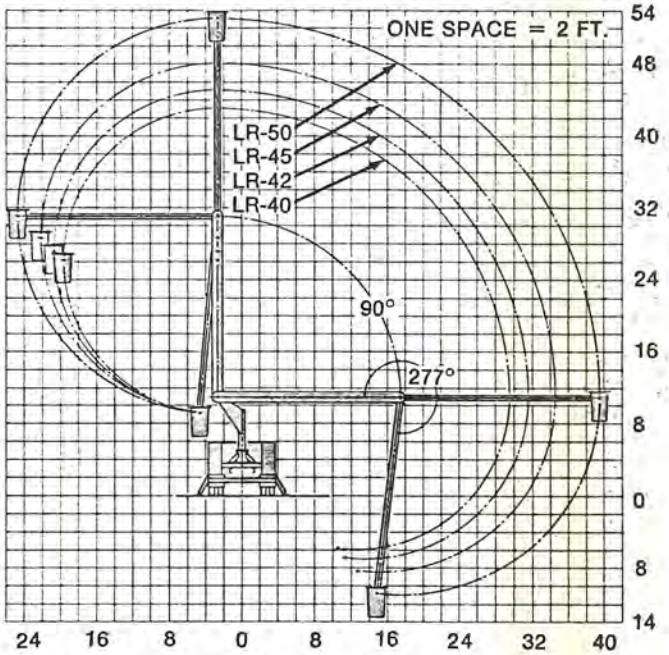
- **Unmatched performance—field tested for durability**
- **Articulating overcenter upper boom permits obstruction-free fieldside access**
- **Choice of platform heights—40′ to 50′**
- **Full insulation standard—upper boom, lower boom and basket liner.**

Asplundh LR model Line Lifts are versatile, tough and productive. They are the answer to your aerial device requirement.

These units feature one or two basket operation with capacities up to 1500 pounds. This makes them ideally suited for a broad range of utility applications such as electrical system maintenance, construction and line clearance plus general service for municipalities, contractors and tree surgeons.

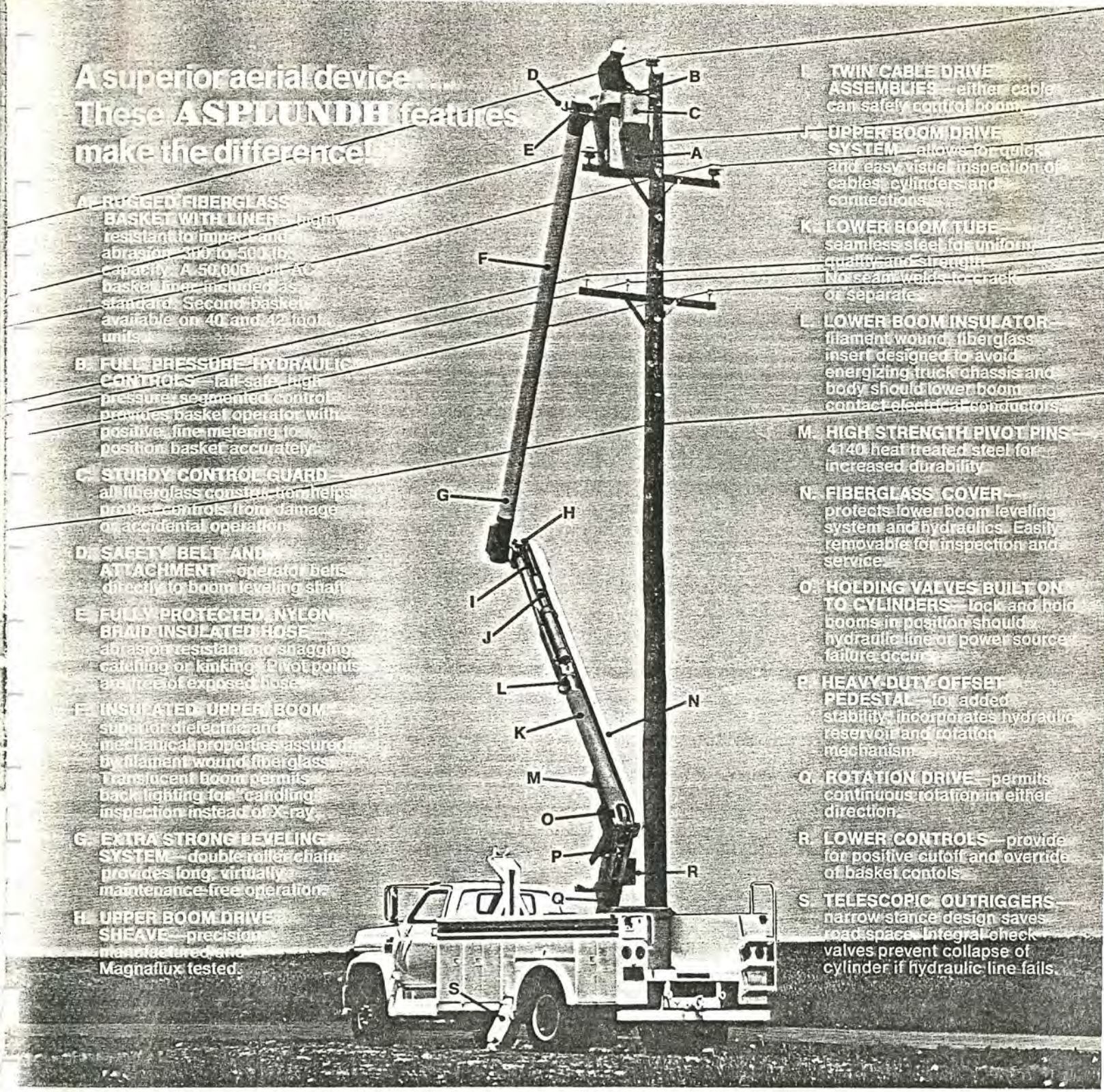
A complete design concept, engineered from the ground to the basket, Asplundh LR model Line Lifts are manufactured for long life under the most stringent working conditions. The workmanship, materials and components in these units are the best obtainable and have been proven through millions of hours of use.

For economy of operation and superior performance in all types of on-and-off the road jobs, specify the Asplundh LR model Line Lift. A product of Asplundh quality, in all ways.



REACH DIAGRAM FOR FLOOR MOUNT MODELS

A superior aerial device... These ASPLUNDH features make the difference!



A. RUGGED FIBERGLASS BASKET WITH LINER—highly resistant to impact and abrasion. 350 to 500 lb. Capacity. A 50,000 volt AC basket liner is included as standard. Second basket available on 40 and 42 foot units.

B. FULL PRESSURE HYDRAULIC CONTROLS—fail-safe, high pressure, segmented controls provides basket operator with positive, fine metering to position basket accurately.

C. STURDY CONTROL GUARD—all fiberglass construction helps protect controls from damage or accidental operation.

D. SAFETY BELT ANCHOR ATTACHMENT—operator belts directly to boom leveling shaft.

E. FULLY PROTECTED, NYLON BRAID INSULATED HOSE—abrasion resistant and snagging, catching or kinking. Pivot points are free of exposed hose.

F. INSULATED UPPER BOOM—superior dielectric and mechanical properties assured by filament wound fiberglass. Translucent boom permits back lighting for "candling" inspection instead of X-ray.

G. EXTRA STRONG LEVELING SYSTEM—double roller chains provides long, virtually maintenance-free operation.

H. UPPER BOOM DRIVE SHEAVE—precision manufactured and Magnaflux tested.

I. TWIN CABLE DRIVE ASSEMBLIES—either cable can safely control boom.

J. UPPER BOOM DRIVE SYSTEM—allows for quick and easy visual inspection of cables, cylinders and connections.

K. LOWER BOOM TUBE—seamless steel for uniform quality and strength. No seam welds to crack or separate.

L. LOWER BOOM INSULATOR—filament wound, fiberglass insert designed to avoid energizing truck chassis and body should lower boom contact electrical conductors.

M. HIGH STRENGTH PIVOT PINS—4140 heat treated steel for increased durability.

N. FIBERGLASS COVER—protects lower boom leveling system and hydraulics. Easily removable for inspection and service.

O. HOLDING VALVES BUILT ON TO CYLINDERS—lock and hold booms in position should a hydraulic line or power source failure occur.

P. HEAVY DUTY OFFSET PEDESTAL—for added stability. Incorporates hydraulic reservoir and rotation mechanism.

Q. ROTATION DRIVE—permits continuous rotation in either direction.

R. LOWER CONTROLS—provide for positive cutoff and override of basket controls.

S. TELESCOPIC OUTRIGGERS—narrow stance design saves road space. Integral check valves prevent collapse of cylinder if hydraulic line fails.

Check these other important features:

- ✓ Side by side boom arrangement.
- ✓ Basket may be stowed high or low for accessibility.
- ✓ Greater articulation than linkage drive units.
- ✓ Lower profile than over and under units.
- ✓ Uniform upper boom speed over entire range of articulation.
- ✓ Effective load capacity increases in direct proportion to the angle of elevation of the upper boom.

All Asplundh Line Lifts are designed and constructed to meet or exceed OSHA paragraphs 1910.67 and 1926.556. Each unit is factory tested for mechanical, structural and electrical integrity.

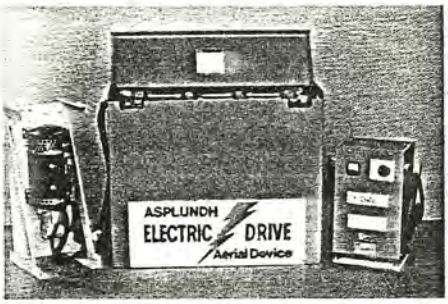
ASPLUNDH LR Model options help increase operator comfort, safety, efficiency and provide long-term economy.

Asplundh offers many options, each designed to let you tailor your Line Lift to meet individual requirements.

Consider these options for improved operator safety and efficiency.

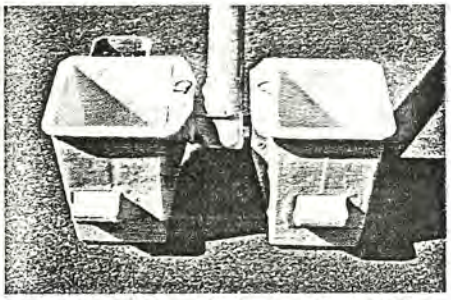
- **Basket Operated Accessories**
  - **Emergency Power System**
  - **Throttle Controls**—automatic or two speed
  - **Engine Stop-Start System**
  - **Instant Basket Control Shut-off**
  - **Hydraulic Tool System**
  - **Hydraulic Booster** for Crimping
- **70 or 100 KV test basket liners**
- **Basket liner floor protector**
- **Basket cover**
- **Tool trays and special tool carriers**
- **Protective Cover** for upper boom
- **Conductor Lift Attachment**
- **Lifting Eye** on lower boom
- **Temporary Crossarm Attachment**
- **Jib Boom Lifting Attachment**
- **Upper Boom Mounted Winch**
- **Additional options available.** Request list.

Electric Drive



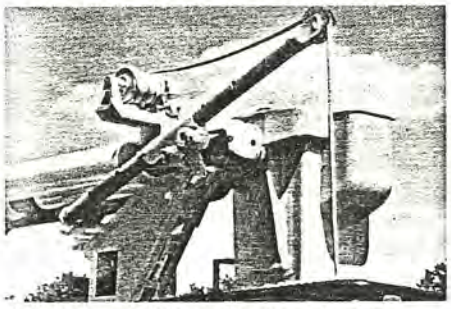
Electric Drive System consists of 24 volt DC motor, charger and battery pack that powers Line Lift and hydraulic tools. Advantages: drastic fuel savings, reduced engine wear and maintenance, pollution-free performance, quiet operation.

Double Basket



Second basket available on 40' and 42' models. Easy to install and remove.

Jib and Winch



The jib boom lifting attachment and boom mounted winch give the LR models a materials handling capability with up to 1500 pounds capacity.

Asplundh offers many body styles, with optional mounting configurations to maximize the utility of the finished unit.

Asplundh Model LR-45 front mount with high stow on 102" CA chassis with a 138" service body.

Asplundh Model LR-50 rear mount with low stow on 102" CA chassis with a 152" service body.

Asplundh Line Lift dealers have extensive experience in sales and service. They can help you select the right model and they will recommend options to meet your specific requirements. For an on-site demonstration of an Asplundh Line Lift, call your dealer today.

The Asplundh name is synonymous with quality aerial devices.

For the right answers to your Line Lift requirements, "ASK ASPLUNDH, THE AERIAL DEVICE PEOPLE"

ASPLUNDH

Asplundh Manufacturing Division
Asplundh Tree Expert Co.
50 East Hamilton Street
Chalfont, Pennsylvania 18914
(215) 822-0542

10M-11-76

Printed in U.S.A.

THE PREFORMED "HOW TO" METHOD FOR A MORE ECONOMICAL, EASIER INSTALLED, BETTER LOOKING TREE CABLING INSTALLATION

With PREFORMED TREE-GRIP dead-ends TG-1250 and TG-1251 for use on Extra High Strength Galvanized Steel Strand.

- **HOW TO ELIMINATE THE COSTLY LABOR AND TIME CONSUMING HASSLE OF CABLE SPLICING**

  The factory formed helical legs of the PREFORMED TREE-GRIP dead-ends [TG-1250 and TG-1251] wrap quickly around 3/16" and 1/4" extra-high strength (EHS) Galvanized strands eliminating the process of splicing common grade galvanized strand.

  THE END RESULT–
  A Labor Saving Application Accomplished In Under 60 Seconds.

- **HOW TO REDUCE COSTLY STRAND INVENTORY; YET MAINTAIN STRENGTH COMPARABILITY**

  By using lower cost 3/16" and 1/4" Extra High Strength Galvanized Strand (Left Hand Lay) with the PREFORMED TREE-GRIP dead-ends TG-1250 and TG-1251, strength comparability to six sizes of common grade galvanized steel strand is attained.

  THE END RESULT–
  Inventory control as well as total strand expenditure will be reduced considerably.

  Note the table below for strength comparisons.

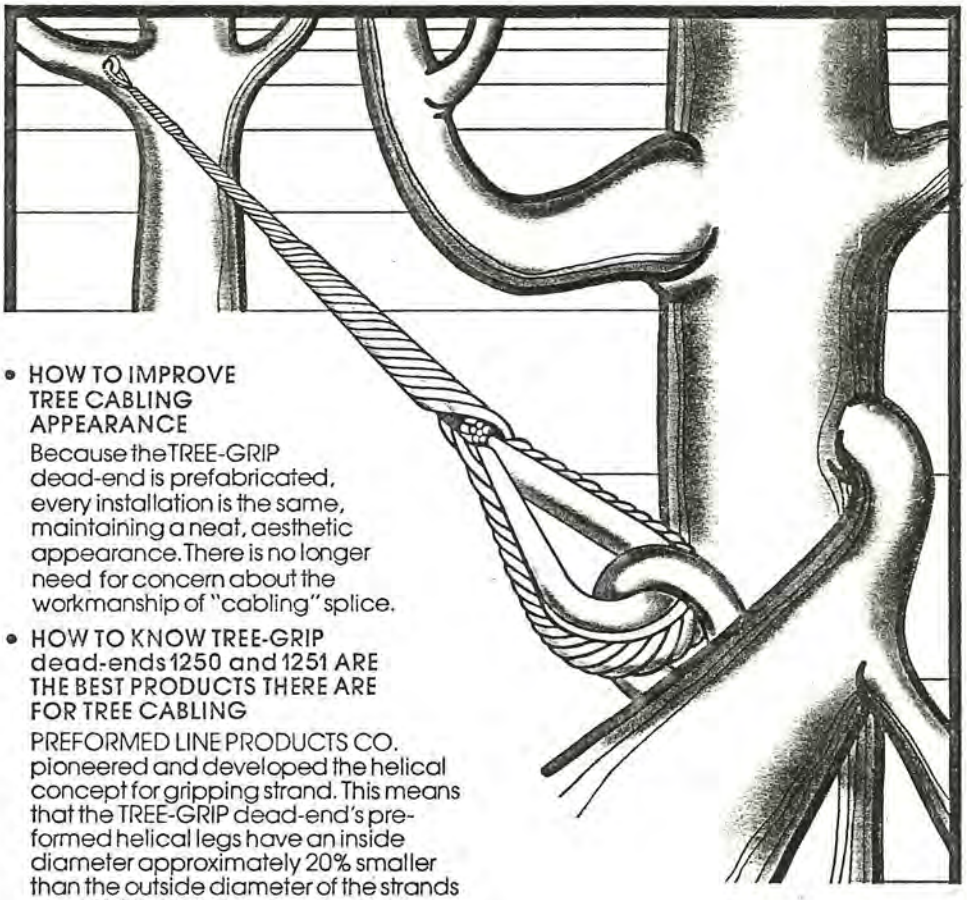
TREE GRIP DEAD-END CATALOG NUMBER	EXTRA HIGH STRENGTH STRAND (EHS)		COMMON GRADE STRAND	
	Size	Published Rated Breaking Strength (RBS)	Size	Published Rated Breaking Strength (RBS)
* TG-1250	3/16"	3,990 Lbs.	3/16"	1,150 Lbs.
			1/4"	1,900 Lbs.
			5/16"	3,200 Lbs.
* TG-1251	1/4"	6,650 Lbs.	3/8"	4,250 Lbs.
			7/16"	5,200 Lbs.
			1/2"	7,400 Lbs.

NOTE: *TREE-GRIP dead-ends are designed to develop 100% of the published Rated Breaking Strength of EHS strand. TREE-GRIP dead-ends can also be used on common grade, Siemens Martin, high strength, and utilities grade strands.

- **HOW TO ELIMINATE TIME-CONSUMING INSTALLATION DELAYS WITH THE TREE-GRIP dead-end's "THIMBLE-LOOP DESIGN FEATURE"**

  TREE-GRIP dead-ends 1250 and 1251 have been designed specifically for the Arborist industry so that the thimble cannot fall out during installation.

  Once the thimble has been placed in the TREE-GRIP dead-end's unique cabled-loop and the helical legs crossed over the designated mark, the thimble cannot fall out. The possibility of installation delays is eliminated.



- **HOW TO IMPROVE TREE CABLING APPEARANCE**

  Because the TREE-GRIP dead-end is prefabricated, every installation is the same, maintaining a neat, aesthetic appearance. There is no longer need for concern about the workmanship of "cabling" splice.

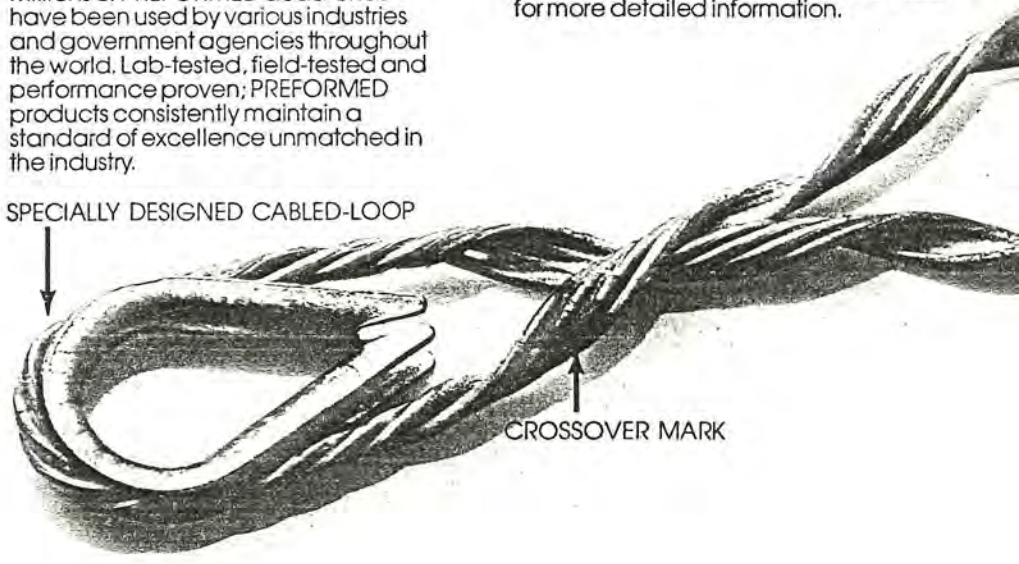
- **HOW TO KNOW TREE-GRIP dead-ends 1250 and 1251 ARE THE BEST PRODUCTS THERE ARE FOR TREE CABLING**

  PREFORMED LINE PRODUCTS CO. pioneered and developed the helical concept for gripping strand. This means that the TREE-GRIP dead-end's preformed helical legs have an inside diameter approximately 20% smaller than the outside diameter of the strands used. TREE-GRIP dead-ends hold the strand snugly and securely providing a constant radial gripping force. This insures that the published Rated Breaking Strength (RBS) of the strand is achieved.

  Millions of PREFORMED dead-ends have been used by various industries and government agencies throughout the world. Lab-tested, field-tested and performance proven; PREFORMED products consistently maintain a standard of excellence unmatched in the industry.

- **HOW TO LEARN MORE ABOUT THE MONEY SAVING TREE-GRIP dead-ends 1250 and 1251**

  Contact the PREFORMED representative or distributor in your area for more detailed information.



HOW TO APPLY TREE-GRIP dead-ends 1250 and 1251

TREE-GRIP dead-ends 1250 and 1251 are applied to extra high strength (EHS) strand. TG-1250 for use on 3/16" EHS strand. TG-1251 for use on 1/4" EHS strand.

When installing "cabling" between two boughs or branches using TREE-GRIP dead-ends, follow normal installation procedures.

1) Match the correct (EHS) strand size needed for the job with the corresponding TREE-GRIP dead-end making sure the strand is left hand lay. Then tape the area of the strand to be cut. This will prevent the individual wires from separating after the cable cutter cuts the strand.

The PREFORMED Safety Guy Wire Dispenser, Catalog No. SGD-0700, is a perfect accessory when carrying and working with extra high strength strand.

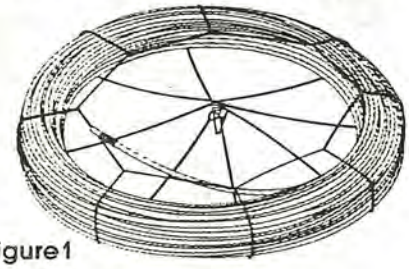


Figure 1

2) Lay the taped end of the cable in the TREE-GRIP dead-end's short leg, slightly above the cross-over mark.

Figure 2

3) Once the cable has been positioned correctly, continue to wrap the short leg of the TREE-GRIP dead-end around EHS strand within two wraps (pitch lengths) of completion. (Figure 3) During the wrapping procedure be sure to pull the legs away from strand. This will facilitate the ease of application.

Figure 3

4) Insert the correct thimble size in the TREE-GRIP dead-end's cabled-loop and cross the longer leg with the already completed short leg at the cross-over mark. The thimble is now secured and cannot fall.

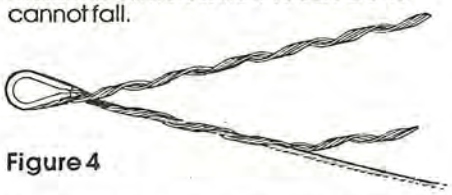


Figure 4

5) Now continue wrapping the long leg around the strand within two pitch lengths of completion. (Figure 5)

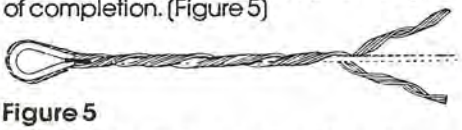


Figure 5

Note—To facilitate the ease of application of the last two pitch lengths of both short and long leg of the TREE-GRIP dead-ends, split each leg into two groups (subsets) and wrap each subset individually to completion. (Figure 6)

Figure 6

BE SURE ALL LEG ENDS ARE SNAPPED PROPERLY ON THE STRAND. IF NOT THE RODS MAY UNWIND FROM THE STRAND.

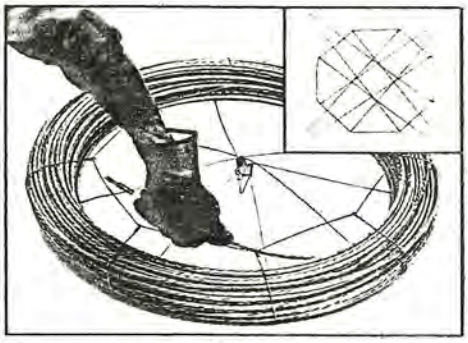
6)Completed Application—If less tension is ever desired after the initial installation, follow this procedure: Unwrap both legs of the TREE-GRIP dead-end within 2 pitch lengths of the cross-over mark and allow the strand to slowly slide through the legs until the desired tension is achieved. Then simply wrap both legs back on strand to completion.

FOR DETAILED APPLICATION, INSTALLATION GUIDE LINES, AND SAFETY CONSIDERATIONS BE CERTAIN TO READ PREFORMED'S TREE-GRIP DEAD-END APPLICATION PROCEDURE. ORDER #73-7-112 (SP-2056)

HOW TO ORDER THE TREE-GRIP DEAD-END 1250, 1251 AND SAFETY GUY WIRE DISPENSER

After contacting the PREFORMED representative or distributor in your area, specify:
TG-1250 for use on 3/16" extra high strength strand.
TG-1251 for use on 1/4" extra high strength strand.
SGD-0700 (Safety Guy Wire Dispenser) for handling and carrying extra high strength strand.

OTHER PREFORMED PRODUCTS FOR THE ARBORIST INDUSTRY

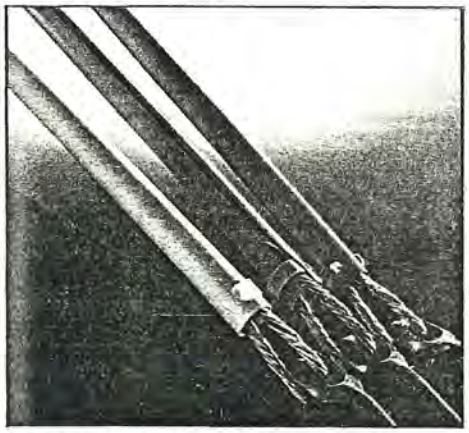


PREFORMED SAFETY GUY WIRE DISPENSER

Handling, carrying, and working with EHS strand is made safe and simple by this unique guy wire dispenser.

PREFORMED STRAND SPLICE

Helically-formed rod subsets applied by hand that quickly join (splice) odd lengths of strand or easily repair strand. Neat in appearance, eliminates strand waste and holds published Rated Breaking Strength of strand.



PREFORMED GUY GUARD

For application to guyed strand. Offers 360° coverage and visibility for both pedestrian and vehicle safety. (Available in three colors: green, grey, or yellow.)

Distributed by:

PREFORMED LINE PRODUCTS

P. O. Box 91129 • CLEVELAND, Ohio 44101 • (216) 461-5200

73-8-166

Litho U.S.A.

TOOLS FOR MEASURING CERTAIN GASES IN THE SOIL ATMOSPHERE

TEST HOLE MAKER ("POGO STICK") M-PACT-O PROBE

Engineers Tool Company
Lake City, Iowa 51499

Zoubek Associates Inc.
42 Birch Avenue
Little Silver, New Jersey 07739

36"-$30 and 48"-$33 long probes. These probes make about half-inch diameter hole in the ground and have insulated shaft.

M-S-A EXPLOSIMETER MODEL 2A-A portable instrument for measuring the concentration of combustible gases through catalytic combustion.

Mine Safety Appliances Company
201 North Braddock Avenue
Pittsburgh, PA 15208

Mine Safety Appliance
110 Glove Avenue
Mountainside, N J 07092

Model 2A Explosimeter-$110. Sampling line 5 foot-$3.65. Hollow probe tube 3 foot-$5.75. Dilution tube (10.1 ratio) $3.30. Explosimeter carrying case-$21

CARBON DIOXIDE GAS ANALYZER-The Fyrite CO_2 Indicator Kit includes: Fyrite indicator with fluid, aspirator sampling assembly, and the sampling case. Sold as the Bacharach complete kit #10-5000 for determining 0-20% concentrations. $58.

Bacharach Instrument Co.
625 Alpha Drive
Pittsburgh, P A 15238

Sunshine Scientific Co.
1810 Grant Avenue
Philadelphia, PA 19100

OXYGEN GAS ANALYZER-The Fyrite O_2 Indicator with fluid for determining 0-21% O_2 concentrations. Purchase only the FYRITE O_2 INDICATOR which can be used with the CO_2 assembly. $40.90.

Bacharach Instrument Co.
625 Alpha Drive
Pittsburgh, PA 15238

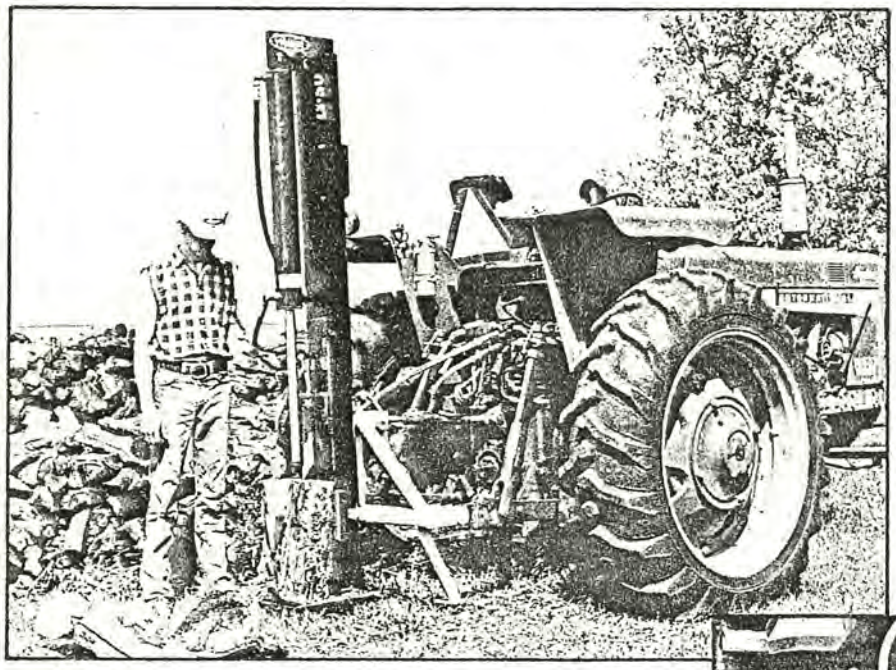
NOTE: The above presented only as examples. Many other manufacturers produce similar or different equipment which will perform the same function.

Spencer H. Davis, Extension Specialist
Cooperative Extension Service
Rutgers University, New Brunswick, NJ

VERMEER

LS-50 Log Splitter

Three-Point Hitch Log Splitter Attachment For Farm Tractors

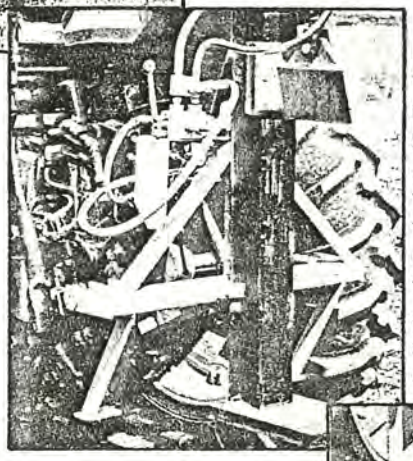


An aching back no longer need be the result of splitting a load of firewood. The Vermeer LS-50 Log Splitter, mounted on your tractor, reduces a previously exhausting and time consuming task to a much more pleasant one. Just back the tractor to the log pile, lower the log splitter to the ground and you're ready for the modern way to split logs. Your tractor isn't tied up permanently, either. Once you're finished with your splitting job, disconnect the LS-50 and it remains upright on its own dismounting stand. If your business or sideline involves supplying firewood for homeowners, campgrounds, or resorts, check out the Vermeer LS-50 Log Splitter – – – it could be exactly what you need.

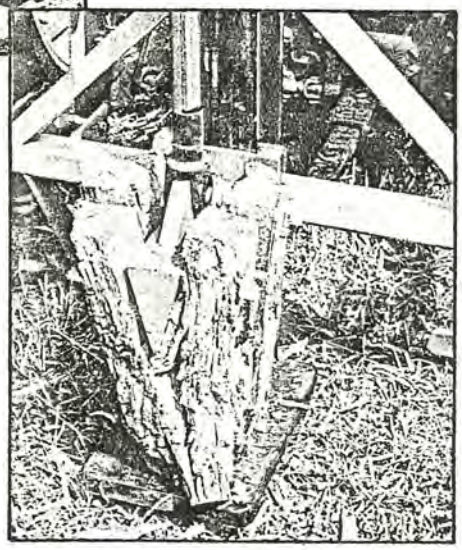
FAST!

EASY!

ECONOMICAL!



Mounting the LS-50 is fast and easy. In just a matter of minutes the log splitter can be mounted on the category 1 or 2 three-point hitch of your tractor. All that's required is backing the tractor to the LS-50, attaching the three points, and connecting the hydraulic lines.

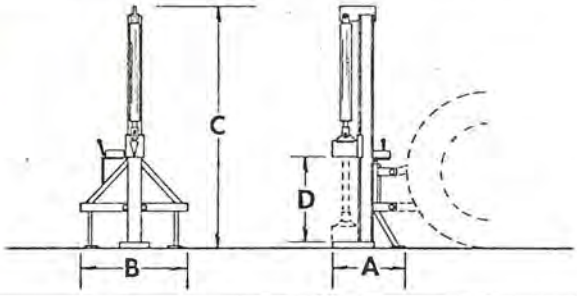


Once the log is placed under the wedge-shaped blade, the operator activates a single hydraulic lever to set the LS-50 blade in motion, splitting even the toughest logs with its 22,000 lbs. of force.

SPECIFICATIONS

GENERAL
Weight: 570 lbs. (258 kg)
Length (A): 24" (61 cm)
Width (B): 39" (99 cm)
Height (C): 92" (234 cm)
Length of wedge stroke, maximum (D): 32" (81 cm)
Wedge material: 1045 medium carbon steel
Hitch: Three-point, category 1 or category 2

HYDRAULIC SYSTEM
System pressure relief: 1750 psi (123 kg/sq. cm)
Valve: Two way, self centering
Hose capacity: 8000 psi surge (563 kg/sq. cm)
Wedge cylinder: 4" x 33", 1 3/4" rod (10.2 x 83.8 cm, 44 mm rod)
Maximum wedge force: 22,000 lbs. (9966 kg)
Specify open or closed center tractor hydraulic system.



VERMEER MANUFACTURING COMPANY
Phone 515 / 628-3141 • Pella, Iowa 50219 U.S.A.

Vermeer Industrial Products Ltd.
306 – 20560 LANGLEY BY-PASS
LANGLEY, B. C. V3A 6K8
PHONE: 530-6221

10-78-PC

APPENDIX 71.

List of Journals and Magazines recommended for circulation to staff concerned with the Boulevard Tree Program

American Nurseryman

American Horticulturist

Arboricultural Association Journal

Arnoldia (Arnold Arboretum)

Garden (Garden Society of New York)

The Garden (Journal of the Royal Horticultural Society)

Gardener's Chronicle and Horticultural Trade Journal

Garden Land (formerly Landscape)

Grounds Maintenance

Horticulture

Hort Science

Journal of the International Society of Arboriculture

Journal of the University of Washington Arboretum

Missouri Botanical Garden Bulletin

Norton Arboretum Quarterly

Landscape

Landscape Ontario

Ontario Association of Landscape Architects Review

Ontario Shade Tree Council Newsletter

Recreation Canada

Forestry Chronicle

Weeds, Trees and Turf

APPENDIX 72

Historic Trees

CORONATION PLANTING COMMITTEE

PATRON

HER MAJESTY THE QUEEN

THE ROYAL RECORD

OF TREE PLANTING
THE PROVISION OF OPEN SPACES
RECREATION GROUNDS & OTHER SCHEMES

UNDERTAKEN IN THE BRITISH EMPIRE AND
ELSEWHERE, ESPECIALLY IN THE UNITED STATES OF AMERICA
IN HONOUR OF THE CORONATION OF

HIS MAJESTY KING GEORGE VI

CAMBRIDGE
PRINTED AT THE UNIVERSITY PRESS
MCMXXXIX

CANADA

Royal Oak, Vancouver Island. In the grounds of the Women's Institute:

1 oak; planted by members of the Women's Institute.

Salmon Arm. In the Court House grounds:

1 English oak from Windsor Great Park; planted by Gordon Hughes of the High School and Marion Turner of the Public School, assisted by C. R. Barlow Esq.; presented by the Salmon Arm Farmers' Institute. In addition the Rev. M. E. West gave those who took part in the function an acorn to plant. These acorns were planted after the main ceremony.

South Pender Island. In the grounds of the new Church:

1 oak, grown from an acorn from Windsor Great Park; planted by Mrs Spalding; presented by Mrs Crane.

Vancouver. In the City Hall grounds, Strathcona Park:

1 oak, grown from an acorn from Windsor Great Park; planted by the Mayor (G. C. Miller Esq.); presented by the Vancouver Horticultural Society.

On the north side of Stanley Park:

1 English oak (*Quercus pedunculata*)—'King George VI Oak'; planted by J. Rogers Esq. (former chairman of the Park Commission).

On the south side of Stanley Park:

1 English oak (*Quercus pedunculata*)—'Queen Elizabeth Oak'; planted by Mrs C. R. Townley, the first woman to be appointed a Park Commissioner in Canada.

Vernon. In Polson Park:

1 Canada hard maple; planted by Mayor E. W. Prowse; presented by the Vernon and District Horticultural Society.

Victoria. In the Mayor's Grove, Beacon Hill Park:

2 oak from Windsor Great Park; planted by the Victoria Women's Institute and the Girl Guides Association. In addition 750 hanging flower baskets were hanging in pairs on the electric light standards in the business sections of the City.