

Landscaped Buffer Specifications

Agricultural Land Commission

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LANDSCAPED BUFFER SPECIFICATIONS

PART 1: INTRODUCTION

Today's increasingly complex land use patterns demand that special attention be paid to the relationship between agricultural and non-farm uses. In the past, a very simple fence and a good neighbour policy may have sufficed; however, present day realities suggest that the combination of agricultural operations and non-farm uses, most often residential uses, require special efforts be made to avoid the conflicts that many agricultural producers are concerned with. Trespass and vandalism to farm crops and equipment, complaints about early morning farm vehicle noise, the drifting of dust and sprays from field operations and smells from the application of manures and composts, are only some of the more commonly expressed concerns.

With the increasing demands being placed on a very limited land base, there will continue to be situations where there will be a hard and distinctive edge between agricultural and other uses.

In an effort to make that edge work to the advantage of the farmer and non-farming public, the Commission has developed "Landscaped Buffer Specifications" which set out a variety of buffering schedules for use in different circumstances. It is important to note that these buffer areas are intended to be established on

the non-farm property rather than coming off of the farm properties.

The Commission will use the specifications, where appropriate, as a condition when considering the approval of applications under the Agricultural Land Commission Act. In addition, these specifications provide a practical guide for councils, regional boards and other agencies where the opportunity exists to create or improve the buffer between agriculture and non-agricultural lands.

This report sets out a gradation of buffers types. These range from a fairly simple minimum vegetative screen, that might apply to low impact situations, to a very comprehensive buffer that incorporates berming, fencing and planting for the screening of noise, views, dust and sprays. There is also a buffer type that allows for the combination of water features and fences for trespass prevention.

In addition, the report specifies separate schedules for plant layout and spacing, acceptable plant materials and fencing. It is anticipated that various combinations of the schedules will allow the greatest flexibility in selecting an appropriate buffer to suit the specific situation at hand.

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LANDSCAPED BUFFER SPECIFICATIONS

PART 2: GENERAL REQUIREMENTS

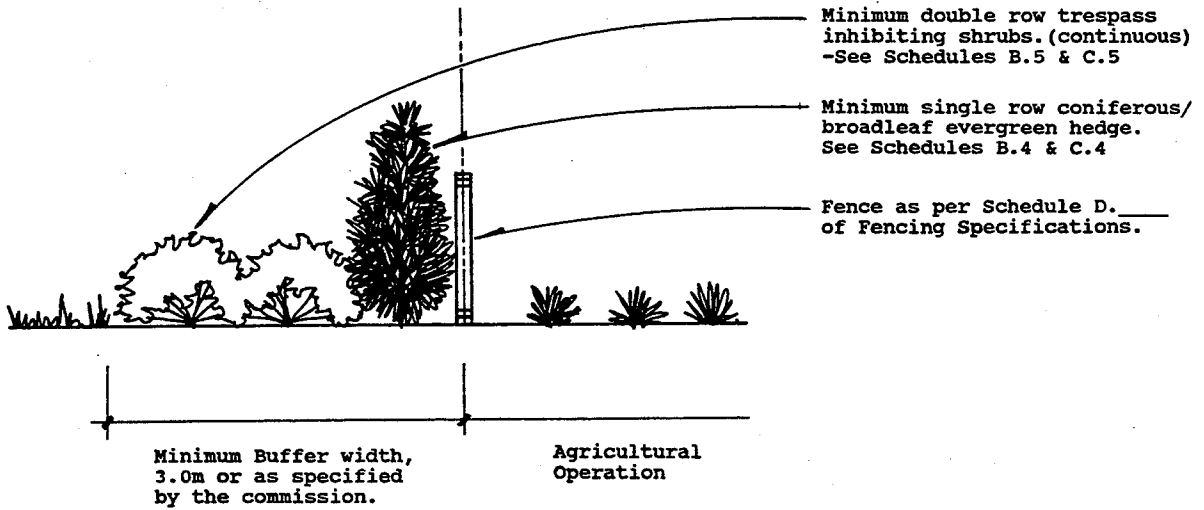
1. At the discretion of the Commission, where landscaped buffer requirements are minimal, Sections 1.2 - 1.4, below, shall not be required. Instead the applicant shall submit the following information:
 - a) a plan of the proposed landscaped buffer describing the existing conditions, the type and location of fencing and the location, species, sizes and quantities of new plant material.
2. At the discretion of the Commission, where landscaped buffer requirements are of a complex and extensive nature, professional consultants having expertise appropriate to the needs of each buffer shall be engaged in the planning and design of the landscape work.
3. All planning, design and construction of each landscaped buffer shall be such that all provisions of the B.C. Society of Landscape Architects (B.C.S.L.A.)/ B.C. Nursery Trades Association (B.C.N.T.A.) Landscape Standard are met.
4. A set of working documents accurately describing existing conditions and the proposed buffer design shall be provided to and approved by the B.C. Agricultural Land Commission before the commencement of construction. Working drawings shall show:
 - a) existing grades;
 - b) proposed grades;
 - c) locations of existing plants or vegetation to be retained;
 - d) locations of existing plants or vegetation to be removed;
 - e) locations of existing and proposed features (i.e. buildings, fencing etc.) and utilities;
 - f) depths of growing medium;
 - g) locations, species, sizes and quantities of new plant material;
 - h) landscape specifications.



SCHEDULE A: BUFFER TYPES

A.1: Minimum Vegetative Screen
(Evergreen Hedge)

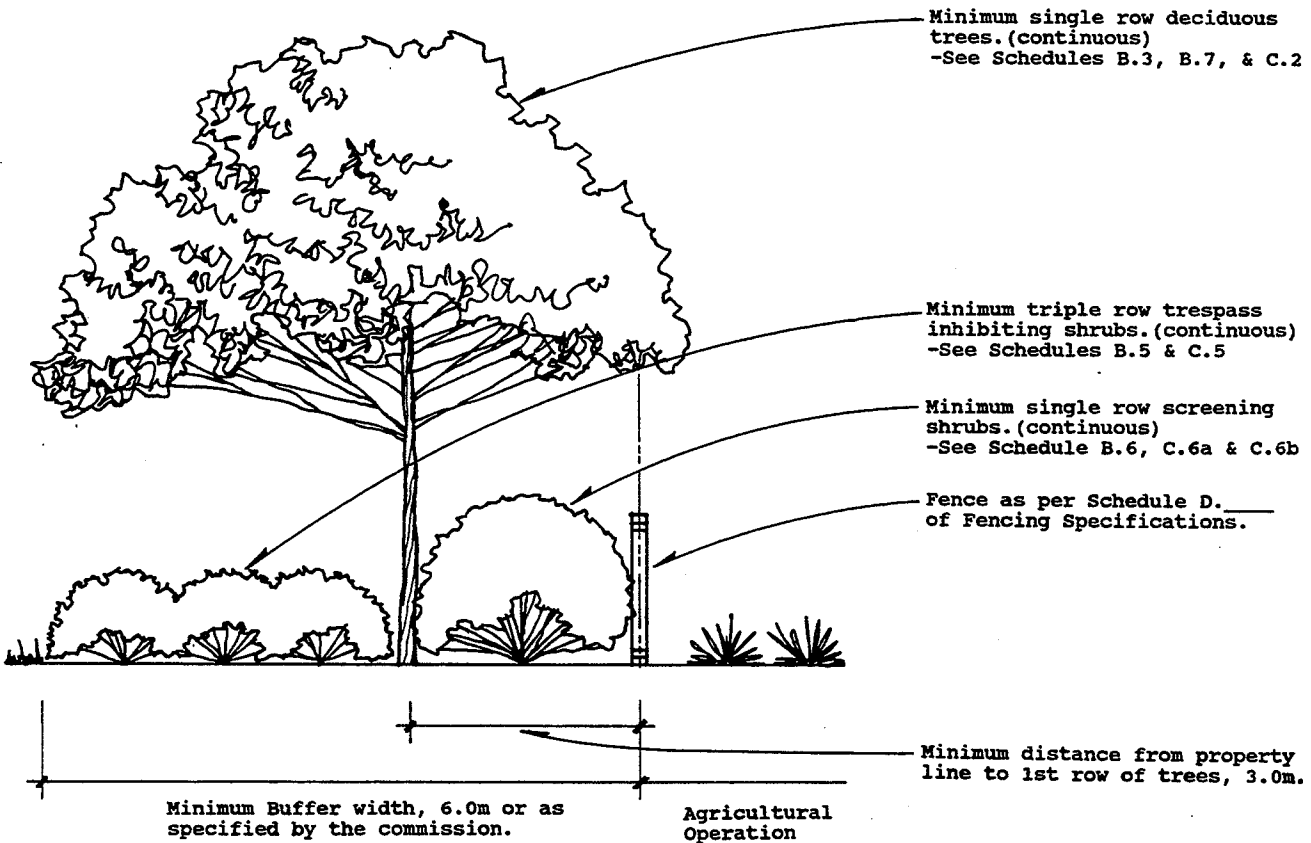
Minimum visual screening and protection of farmland from trespass and vandalism.



SCHEDULE A: BUFFER TYPES

**A.2: Minimum Vegetative Screen
(Medium Height Trees)**

Inhibits trespass and vandalism while providing minimum protection to non-farm developments from the movement of dust and pesticide spray from adjacent agricultural operations.

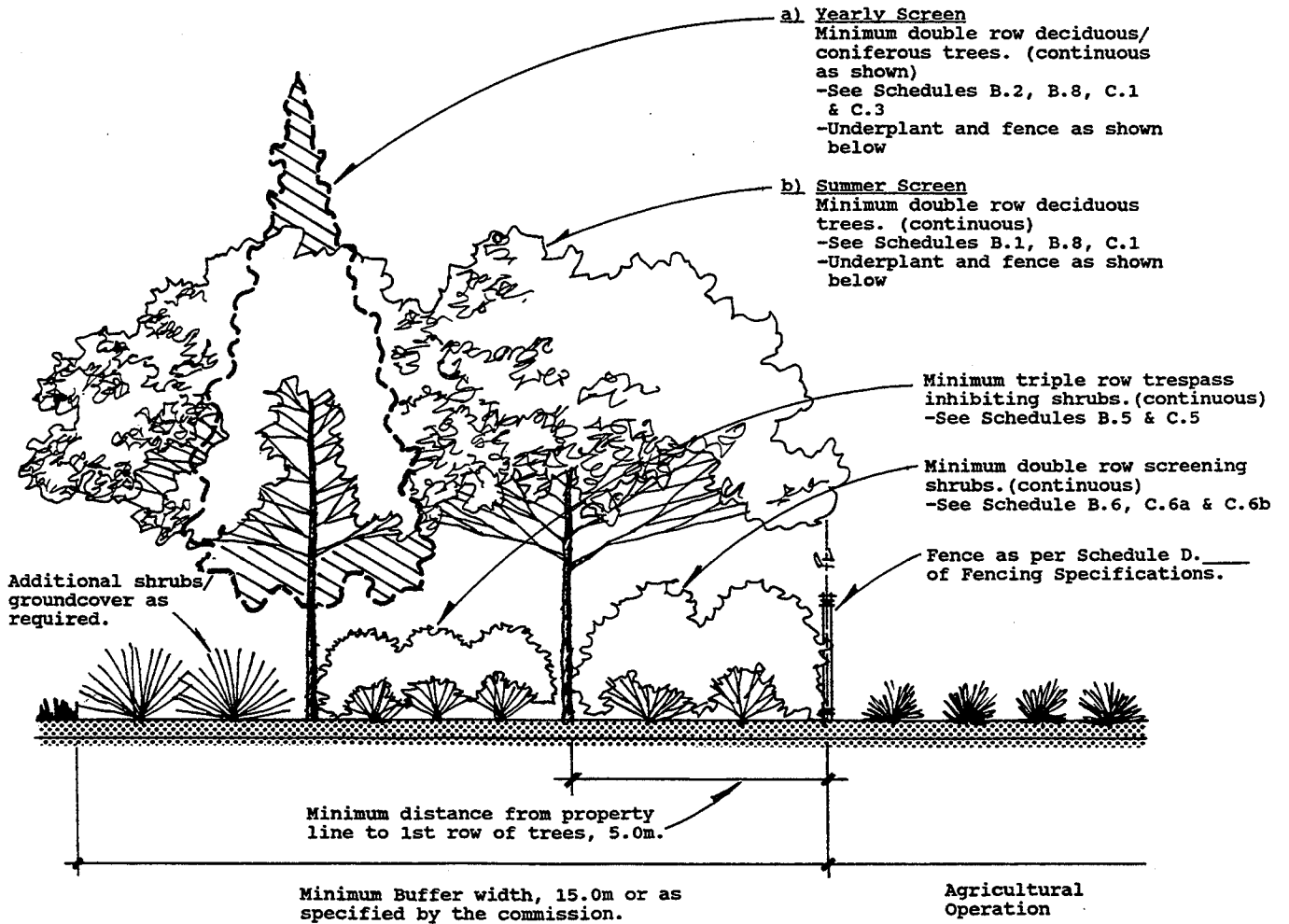


SCHEDULE A: BUFFER TYPES

A.3: Airborne Particle and Visual Screen

- a) Yearly Screen
- b) Summer Screen

Buffers agricultural operations from trespass and vandalism while offering a greater physical setback between potential conflicting land uses, visually screening uses from one another and minimizing the exchange of undesirable airborne particulate matter between incompatible land uses. (Note: Coniferous trees should be used in the buffer in situations where visual and particulate screening is required on a year round basis. Solution A.3a)

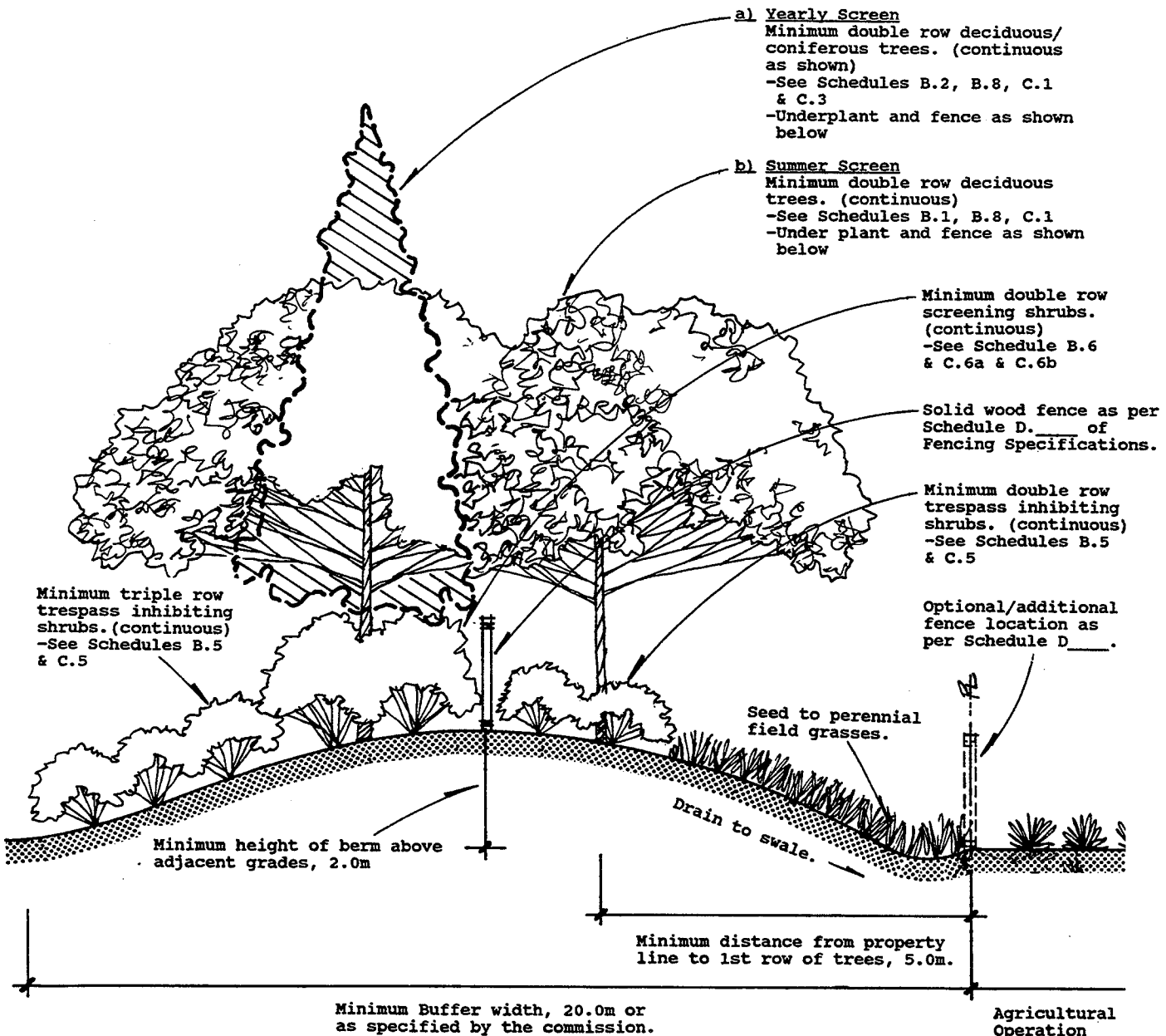


SCHEDULE A: BUFFER TYPES

A.4: Noise, Airborne Particle & Visual Screen

- a) Yearly Screen
- b) Summer Screen

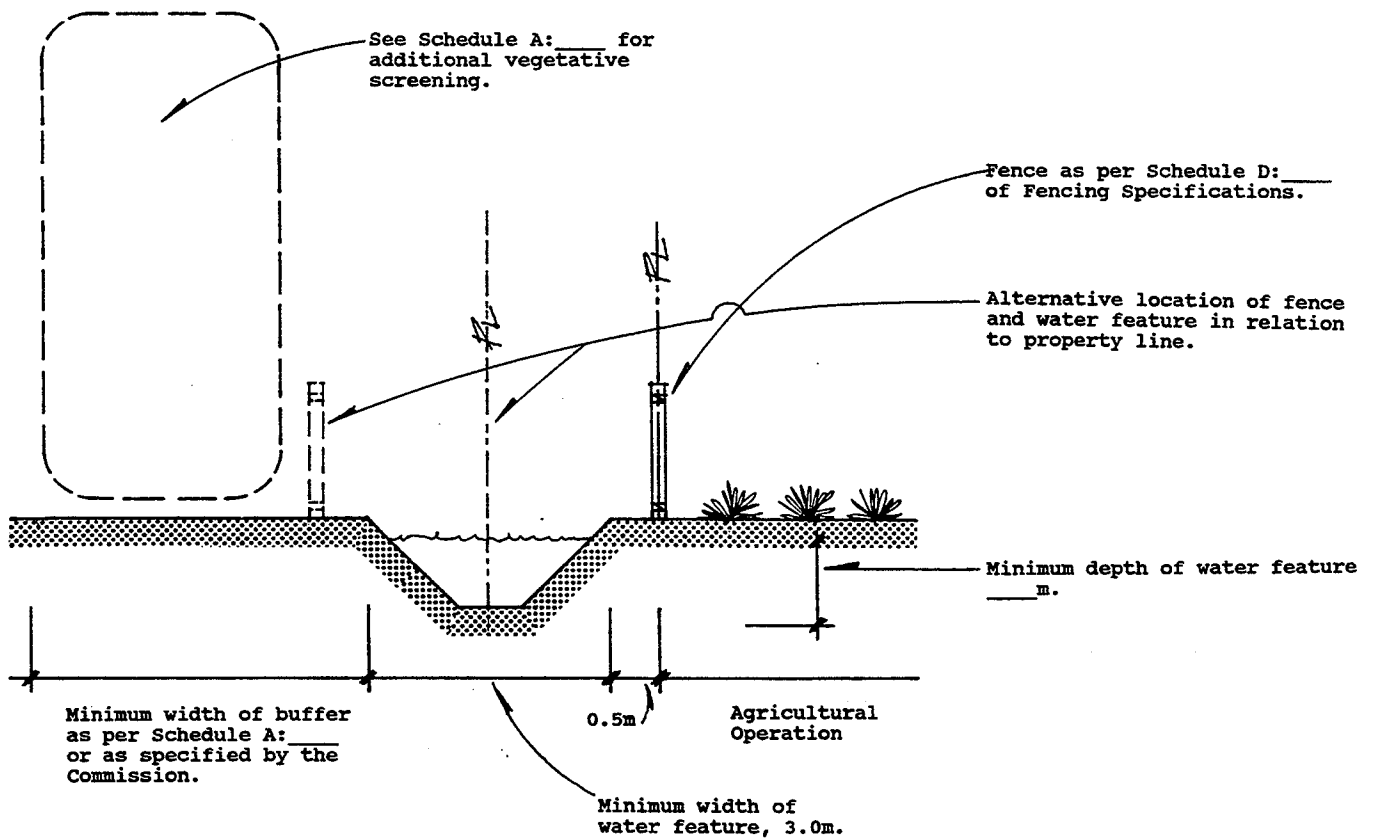
To Buffer agricultural land from trespass and vandalism, visually screen incompatible uses, reduce the exchange of particulate matter between adjacent land uses and reduce the transmission of noise. (Note: Coniferous trees should be used in the buffer in situations where visual and particulate screening is required on a year round basis. Solution A.4a)



SCHEDULE A: BUFFER TYPES

A.5: Trespass Prevention
(Water Feature and Fence)

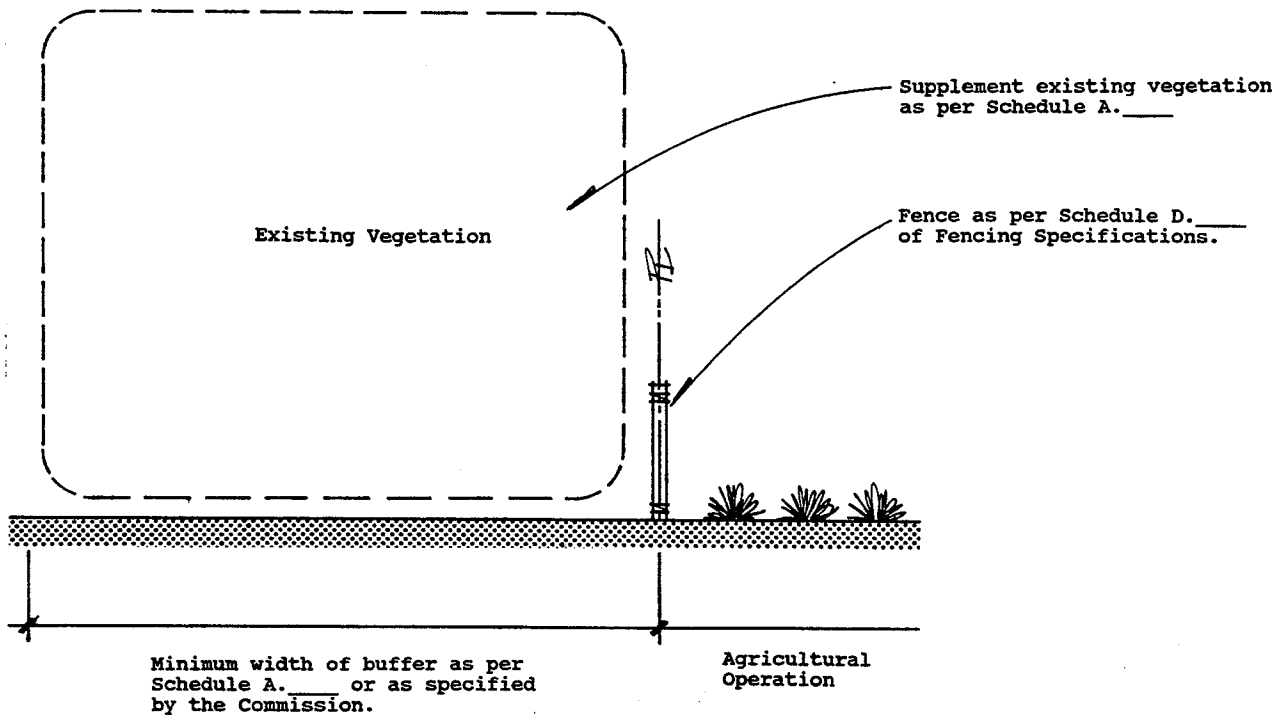
For use in those situations where a water body (i.e. slough, creek, river, lake, pond or drainage ditch) exists or is planned. Trespass prevention is enhanced with incorporation of vegetative buffering as per the following diagram.



SCHEDULE A: BUFFER TYPES

**A.6: Existing Vegetation Retention *
(with Vegetation Supplement Option)**

For use in those situations where existing vegetation is of a density and structure which will meet Commission buffering requirements. The vegetation will be protected and maintained by restrictive covenant and supplemented if required as per the following diagram.



*Note: This Specification will be accompanied by a Restrictive Covenant detailing conditions for:

- a) thinning and clearing of existing vegetation
- b) the width of buffer
- c) locating structures, services and additional uses within the retention zone

SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

GENERAL REQUIREMENTS

1. All plant material shall be located as shown in Schedules B.1-B.6 except where obstructions overhead or below ground are encountered or as specified by the Commission.
2. Immediately following planting, to prevent excessive motion, all trees shall be braced in an upright position, using guy wires or stakes with ties, as shown in Schedules B.7 and B.8. All materials used in tree support shall meet the following specifications.

SCHEDULE B.7

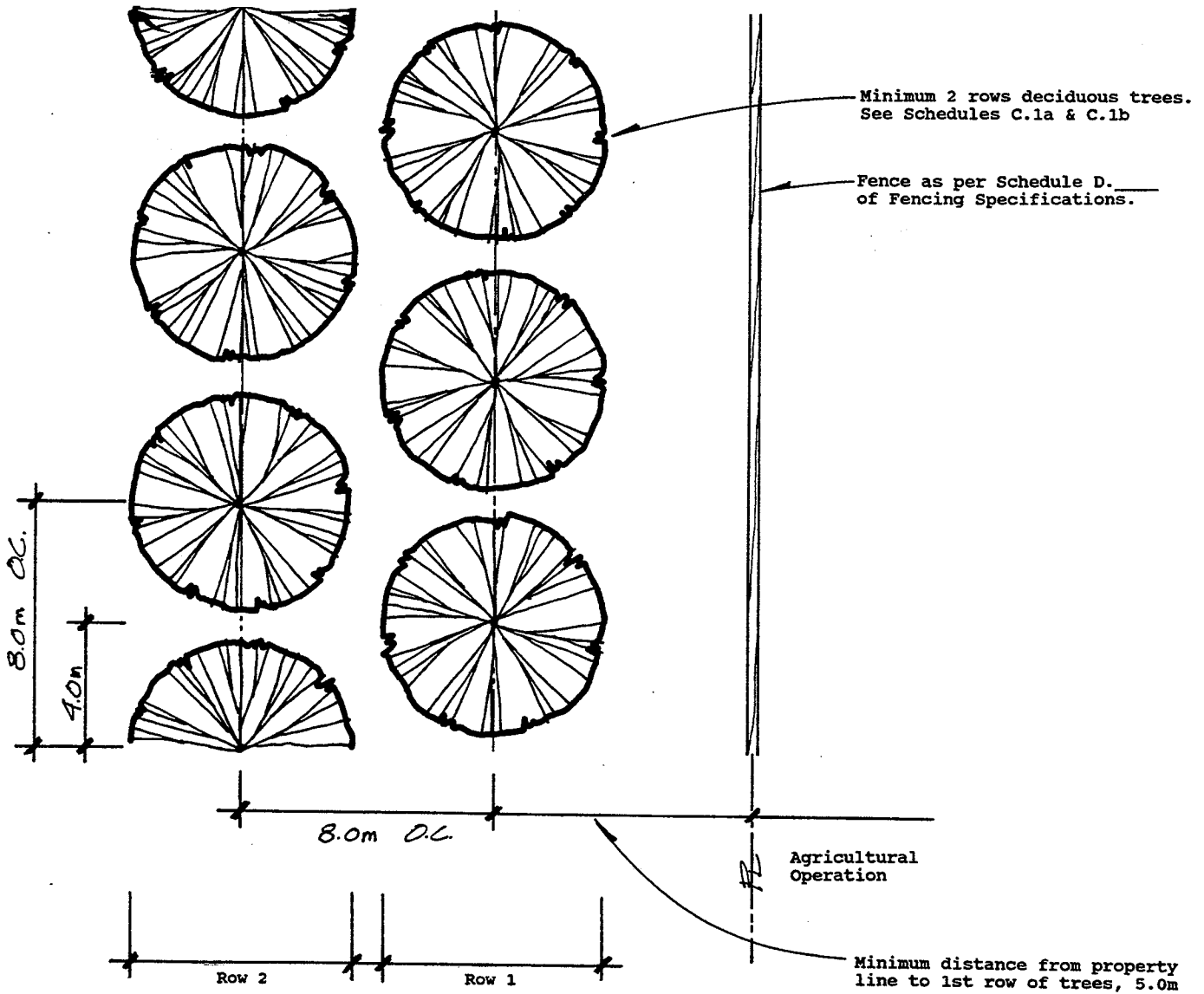
- 2.1 All support stakes shall be equally spaced about each tree, shall be pressure treated, be standard 50 X 50mm, and a minimum of 2440mm in length.
- 2.2 Support stakes shall be driven vertically into the ground a minimum of 940mm and support at least 1500mm of the tree stem.
- 2.3 Double strand, #12 gauge galvanized wire shall be used to connect each support stake to the tree stem. Wire will be twisted to take up slack and prevent excessive motion of the tree.
- 2.4 12mm reinforced black rubber hose shall be used to encase support wires and prevent direct contact with the bark of the tree.

SCHEDULE B.8

- 2.5 Three guy wires shall be spaced equally about each tree at approximately 120 degrees between each guy. Each guy shall consist of two strands of galvanized #12 gauge wire and be attached to the tree at an angle of approximately 45 degrees at about 1/3 to 1/2 the height of the tree.
 - 2.6 12mm reinforced black rubber hose shall be used to encase guy wires and prevent direct contact with the bark of the tree.
 - 2.7 Each guy shall be anchored in the ground using 50 x 100 x 900mm notched stakes which have been driven into the ground at an angle so that the tops of the stakes are at least 150mm below finished grade.
 - 2.8 Each guy shall be made taut using 150mm turnbuckles.
 - 2.9 Brightly coloured flagging tape shall be attached to each guy for the duration of the tree support.
3. Tree stakes and guy wires shall be removed once the trees are stable. Tree stakes and guy wires should remain for a maximum of two years.

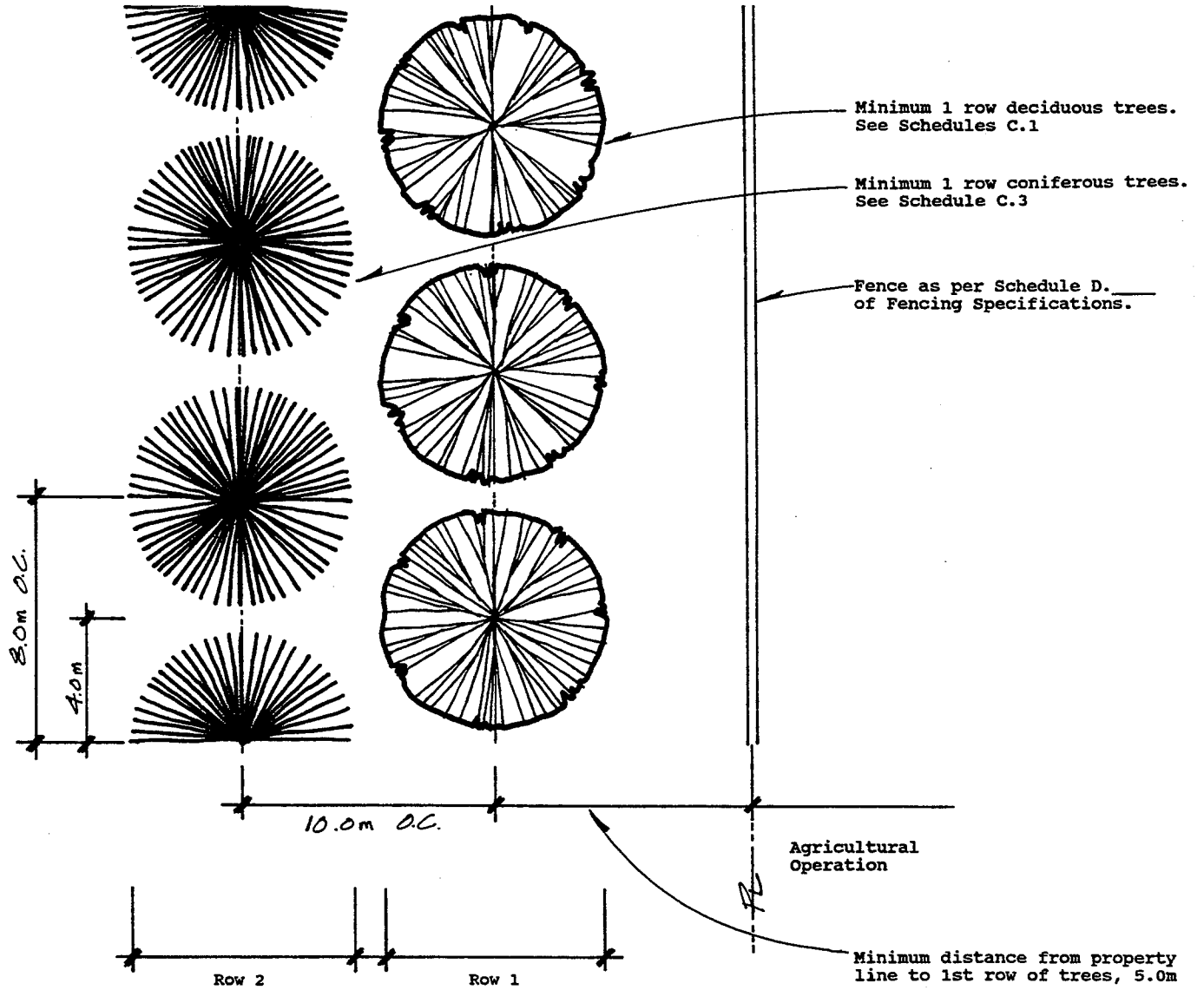
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.1: Deciduous Tree Screen (Tall)



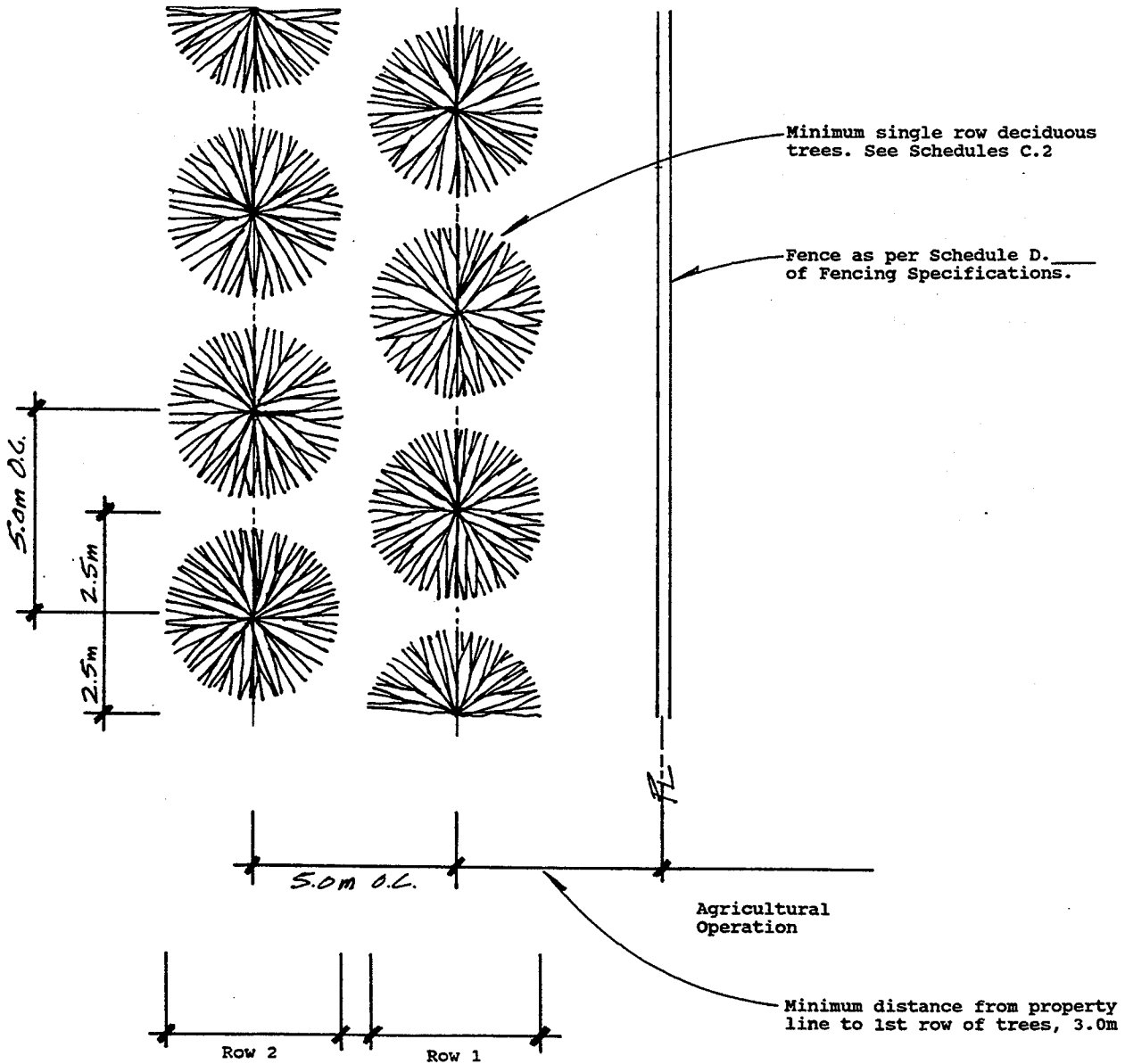
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.2: Coniferous/Deciduous Tree Screen (Tall)



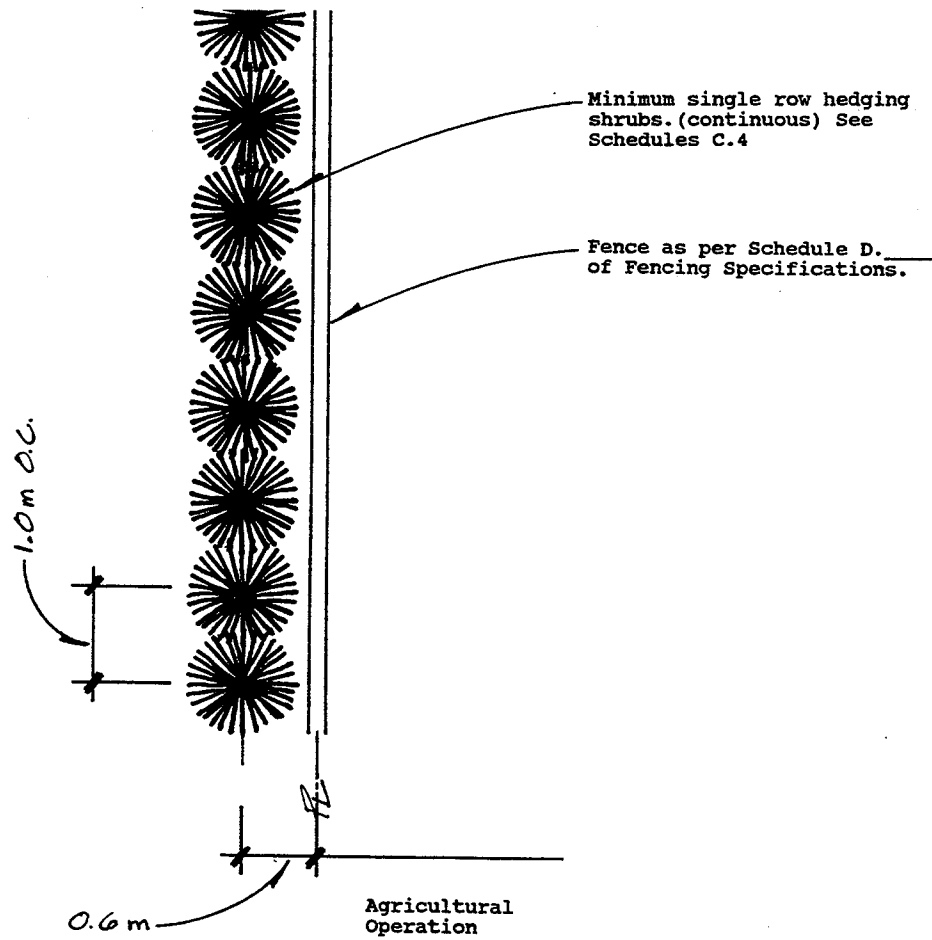
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.3: Deciduous Tree Screen (Medium Height)



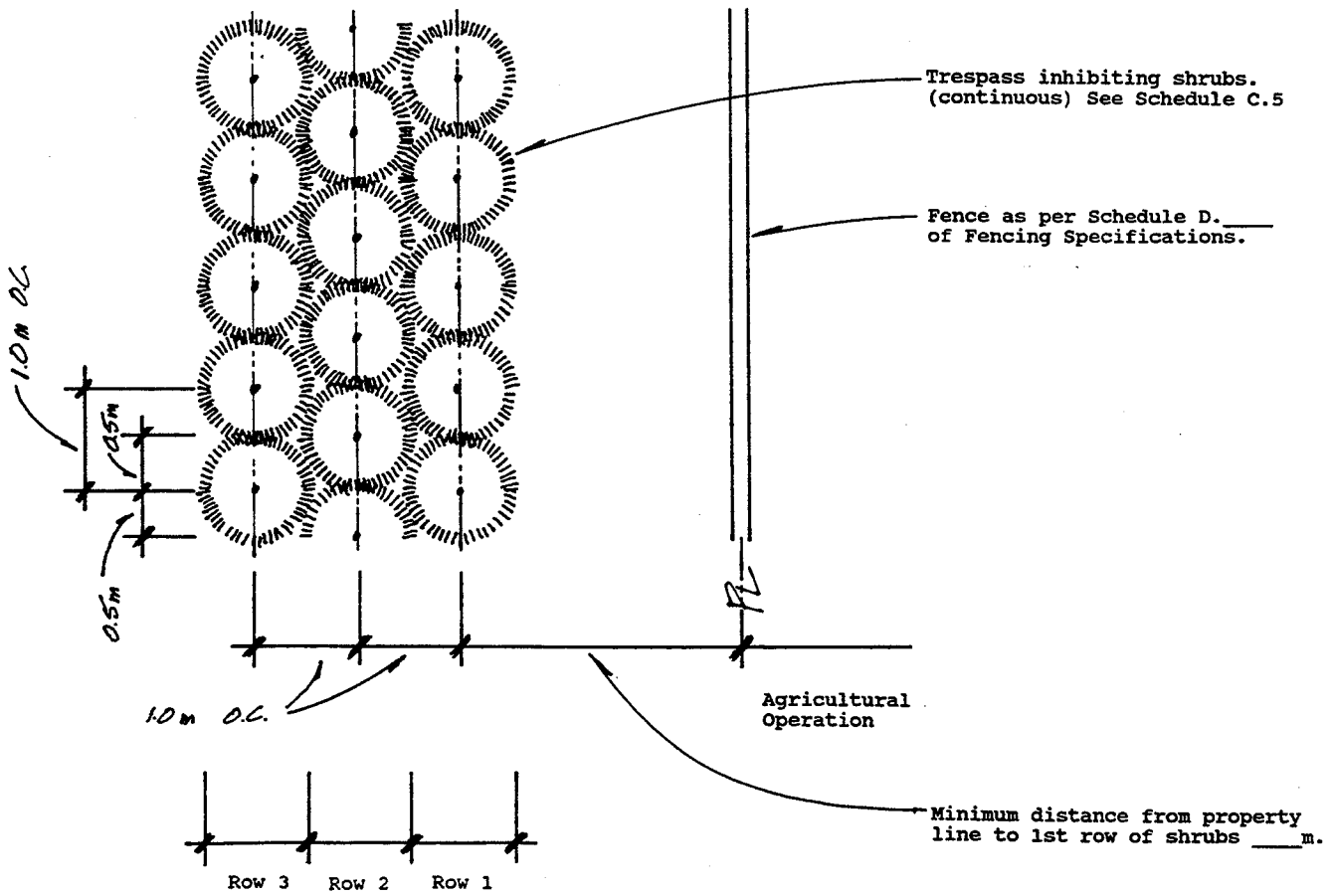
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.4: Hedging Shrubs



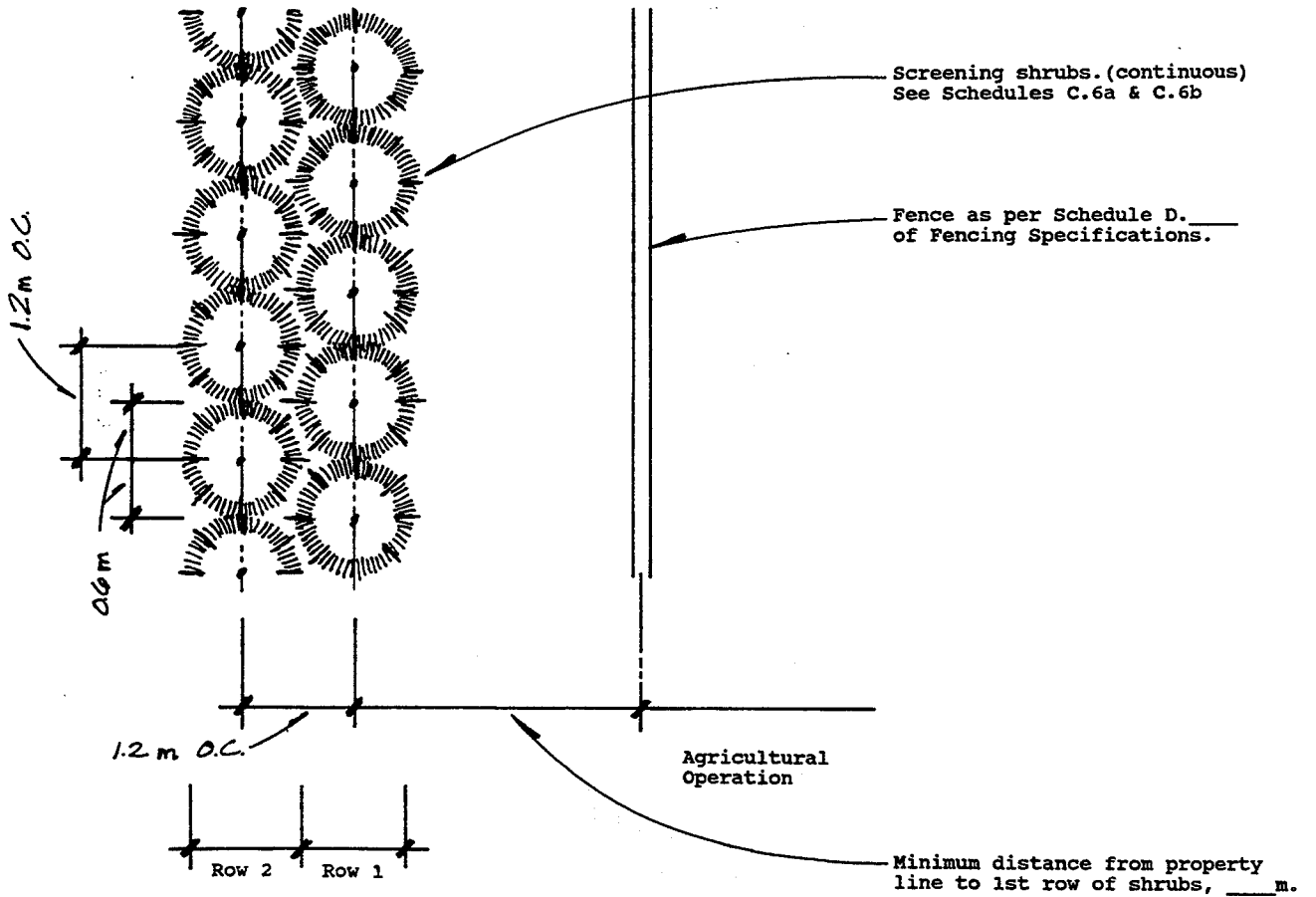
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.5: Trespass Inhibiting Shrubs



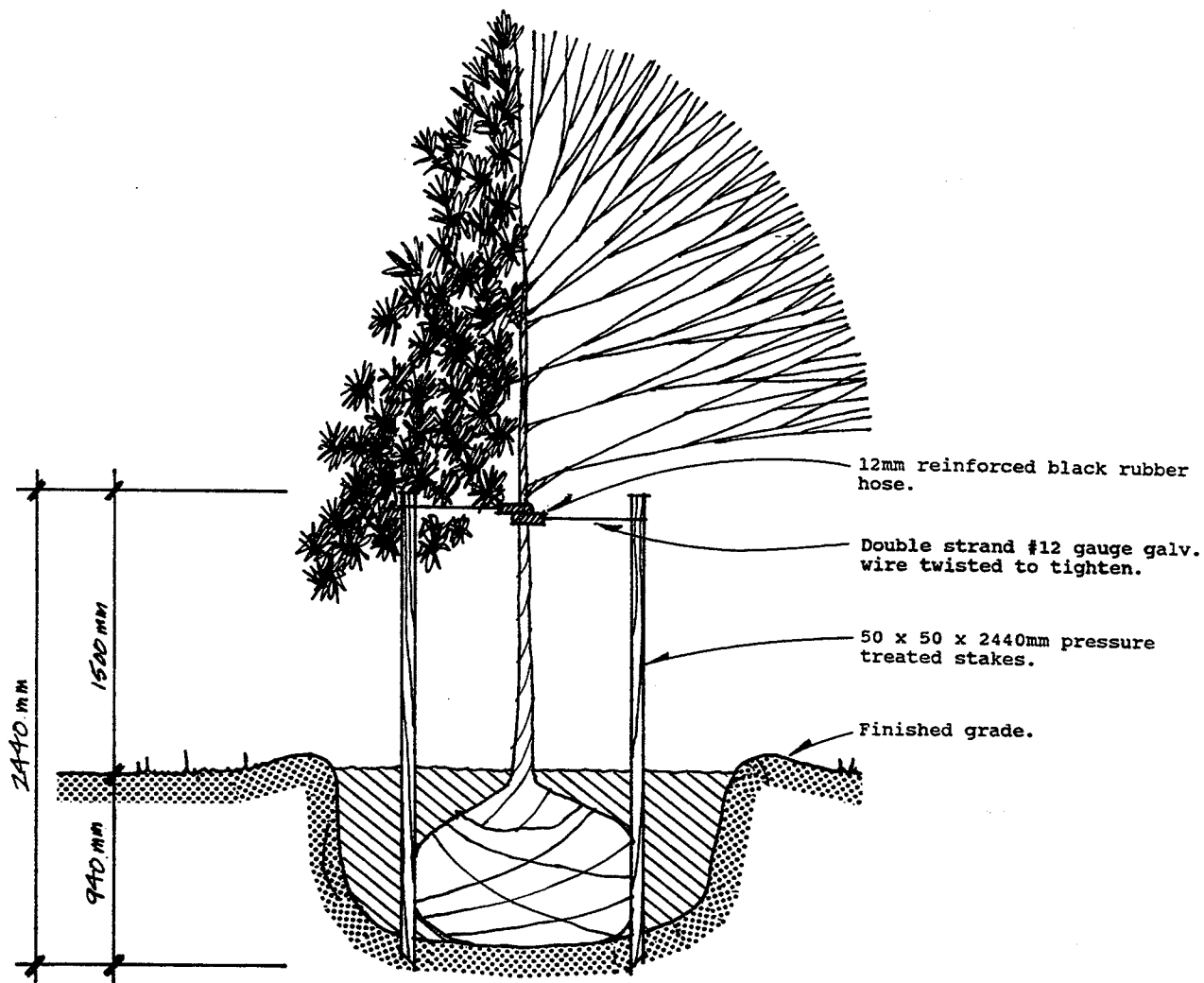
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.6: Screening Shrubs



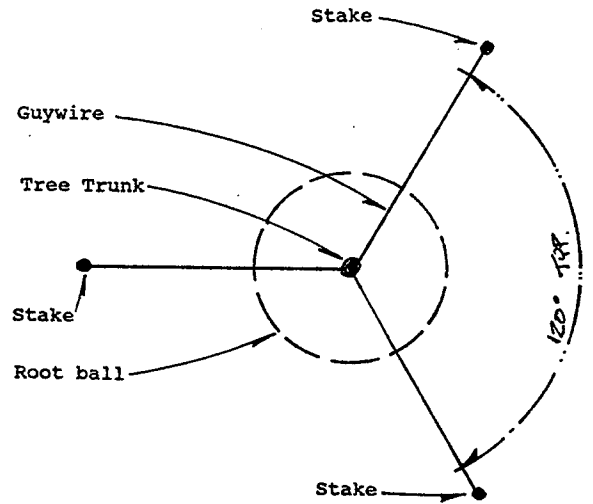
SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.7: Staking for Deciduous/Coniferous Trees
(deciduous trees < 6cm caliper & conifer trees < 2.5m in height)

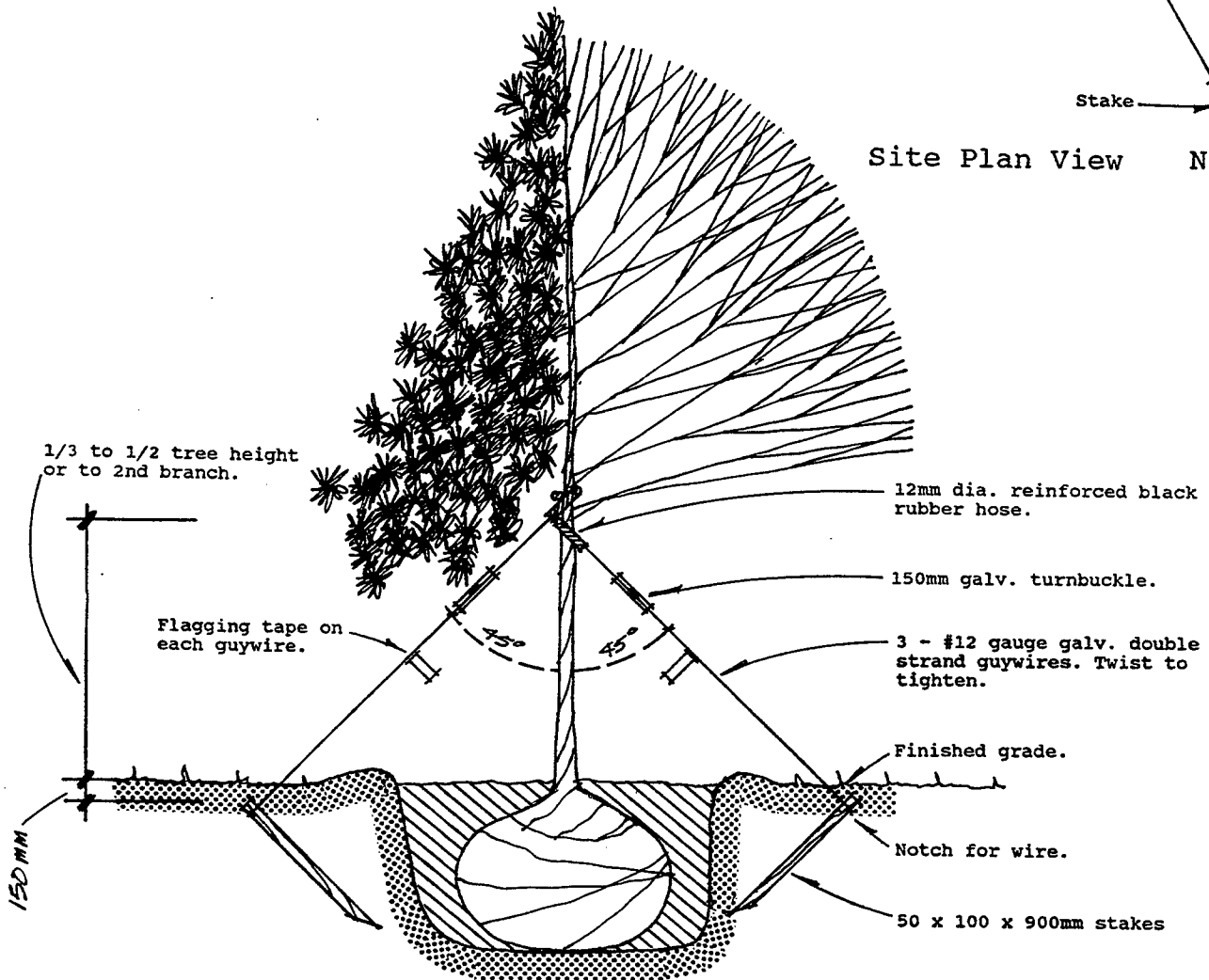


SCHEDULE B: PLANT LAYOUT, SPACING & SUPPORT

B.8: Guying for Deciduous/Coniferous Trees
 (deciduous trees \geq 6cm caliper &
 coniferous trees \geq 2.5m in height)



Site Plan View N.T.S.





SCHEDULE C: BUFFER PLANT MATERIAL

GENERAL REQUIREMENTS

Schedule C lists acceptable plant material to be used in the buffer landscaping. The botanical and common names along with the hardiness rating and minimum planting size are indicated for each plant listed. (See Appendix A at the back of this schedule for a location map and further explanation of plant hardiness zones.) Ultimately, the precise selection of plants from this list will depend on the local climate and site specific conditions.

- Note:
- a) The use of plant materials, which is not included in this list, will be considered and reviewed by the Commission to determine their acceptability.
 - b) The Commission also encourages the use of native plant material when available and the retention of existing vegetation where practical and compatible with adjacent farming operations.
1. Schedule C indicates the minimum acceptable size for each species/variety at time of planting. Where shortages occur, smaller size plant material may be considered by the Commission.
 2. All plants shall be true to name, type and form, and representative of their species/variety. Plants shall be compact and properly proportioned. Weak, thin plants are not acceptable.
 3. All plants shall be healthy with well developed form and branches and with vigorous, fibrous root systems and shall be free from defects, decay, disfigured roots, sun scald injuries, abrasions of the bark, plant diseases and insect pests.
 4. Trees shall have straight stems unless that would be uncharacteristic and shall be well and characteristically branched for the species/variety.
 5. Root balls and soil in containers shall be free from noxious perennial weeds.
 6. Maintenance procedures shall be applied to all buffer plantings on a regular basis during the growing year.
 7. All planted areas shall have all weeds removed at least once per month during the growing season.
 8. All planted areas shall be inspected for pests and diseases at least every two month during the growing season. Treatment for pests or diseases shall be carried out promptly.

SCHEDULE C: BUFFER PLANT MATERIAL**C.1: DECIDUOUS TREES - TALL (>15m)**

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS ZONE</u>	<u>SIZE</u>
Acer platanoides 'Crimson King'	Norway Maple	3	7cm cal.
'Emerald Queen'	"	"	"
'Summershade'	"	"	"
Acer pseudoplatanus	Sycamore-maple	5	7cm cal.
Acer rubrum 'October Glory'	Red Maple	3	7cm cal.
'Schlesinger'	"	"	"
'Shade king'	"	"	"
Acer saccharum	Sugar Maple	3	7cm cal.
Aesculus x carnea 'briotii'	Red Horse Chestnut	4	"
Cercidiphyllum japonicum	Katsura Tree	4	"
Davidia involucrata	Handkerchief Tree	6	"
Fagus sylvatica 'Laciniata'	European Beech	4	"
'Purpurea'	Purple-leaved Beech	4	"
'Riversii'	" " "	4	"
Larix kaempferi	Japanese Larch	5	2.0m ht.
Larix occidentalis	Western Larch	5	2.0m ht.
Liquidambar styraciflua 'Palo Alto'	Sweetgum	6	7cm cal.
	"	"	"
Liriodendron tulipifera	Tulip Tree	5	"
Magnolia kobus	Magnolia	4	"
Metasequoia glyptostroboides	Dawn Redwood	5b	2.0m ht.
Platanus x acerifolia	London Plane	5	"
Populus tremuloides	Quaking Aspen	1	"
Prunus sargentii	Sargents Cherry	4	"
Quercus palustris	Pin Oak	6	7cm cal.
Quercus rubra	Red Oak	3	"
Robinia pseudoacacia 'frisia'	Black Locust	3	"

SCHEDULE C: BUFFER PLANT MATERIAL

C.2: DECIDUOUS TREES - MEDIUM HEIGHT (<15m)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS ZONE</u>	<u>SIZE</u>
Acer campestre	Field Maple	5	5cm cal.
Acer davidii	David's Maple	6	2.0m ht.
Acer negundo	Box Elder	2	2.0m ht.
Amelanchier canadensis	Downy Serviceberry	4	2.0m ht.
Amelanchier laevis	Shadbush		2.0m ht.
Betula jacquemontii	Jacquemont Birch	7	5cm cal.
Carpinus betulus	European Hornbeam	5	5cm cal.
Cercis canadensis	Eastern Redbud	5	5cm cal.
Cornus florida	Flowering Dogwood	5	2.0m ht.
Cornus mas	Cornelian Cherry	4	2.0m ht.
Cornus nuttallii 'White Wonder'	Dogwood	4	2.0m ht.
Eleagnus angustifolia	Russian Olive	2b	2.0m ht.
Fagus sylvatica 'Dawyckii'	European Beech Dawyck Beech Golden Beech	6 6 6	5cm cal. 5cm cal. 5cm cal.
Halesia monticola	Mountain Silver Bell	5	5cm cal.
Magnolia dawsoniana	Dawson Magnolia	7	2.5m ht.
Magnolia sieboldii	Oyama Magnolia	7b	2.5m ht.
Magnolia X soulangiana	Saucer Magnolia	5b	2.5m ht.
Oxydendron arboreum	Sorrel Tree	5	2.0m ht.
Prunus padus	European Bird Cherry	3	6cm cal.
Prunus serrulata	Japanese Cherry	5-6	6cm cal.
Prunus subhirtella	Higan Cherry	5	6cm cal.
Prunus yedoensis 'akebono'	Daybreak Cherry	6	6cm cal.

continued

C.2: DECIDUOUS TREES - MEDIUM HEIGHT (<15m) (cont.)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS ZONE</u>	<u>SIZE</u>
Rhus typhina	Staghorn Sumac	3	2.0m ht.
Sophora japonica 'Regent'	Regent Pagoda Tree	4	5cm cal.
Sorbus aucuparia 'Rosedale'	European Mountain Ash	3	5cm cal.
Stewartia pseudocamellia	Japanese Stewartia	5	5cm cal.
Styrax japonica	Japanese Snowdrop	5	5cm cal.
Tilia x Euchlora	Crimean Linden	4	5cm cal.

SCHEDULE C: BUFFER PLANT MATERIAL**C.3: CONIFEROUS TREES - TALL (>15m)**

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS ZONE</u>	<u>SIZE</u>
Abies amabilis	Amabilis Fir	5	2.5m ht.
Abies concolor	Colorado White Fir	4	2.5m ht.
Abies pinsapo	Spanish Fir	6	2.5m ht.
Calocedrus decurrens	Incense Cedar	6	2.0m ht
Cedrus atlantica glauca	Blue Atlas	6	2.5m ht.
Cedrus deodara	Deodar Cedar	7	2.5m ht.
Chamaecyparis nootka. 'Glauca'	Blue Nootka Cypress	4	2.5m ht.
'Lutea'	Yellow Cypress	4	2.5m ht.
Cryptomeria japonica	Japanese cryptomeria	6	2.5m ht.
Cupressocyparis leylandii	Leyland Cypress	6	2.0m ht.
Picea abies	Norway Spruce	2	2.5m ht.
Picea glauca	White Spruce	1b	2.5m ht.
Picea engelmannii	Engelmann Spruce	2	2.5m ht.
Picea pungens 'koster'	Colorado Spruce Koster's Blue Spruce	2 2	2.0m ht. 2.0m ht.
Picea sitchensis	Sitka Spruce	6	2.0m ht.
Pinus contorta 'contorta'	Lodgepole Pine	2	2.5m ht.
Pinus nigra	Austrian Pine	4	2.5m ht.
Pinus parviflora	Japanese White Pine	4	2.5m ht.
Pinus ponderosa	Ponderosa Pine	4	2.5m ht.
Pinus strobus	White Pine	3	2.5m ht.
Pinus sylvestris	Scotch Pine	2b	2.5m ht.
Pinus thunbergii	Japanese Black Pine	5	2.5m ht.

continued

C.3: CONIFEROUS TREES - TALL (>15m) (cont.)

<u>BOTANICAL NAME</u>	<u>COMMON</u>	<u>HARDINESS</u>	<u>SIZE</u>
Pseudotsuga menziesii	Douglas Fir	4-6	2.5m ht.
Sequoia sempervirens	Coast redwood	7	2.5m ht.
Sequoiadendron giganteum	Giant Redwood	6	2.5m ht.
Thuja plicata	Western Red Cedar	5	2.5m ht.
Tsuga heterophylla	Western Hemlock	5	2.5m ht.
Tsuga mertensiana	Mountain Hemlock	4	2.0m ht.

SCHEDULE C: BUFFER PLANT MATERIAL

C.4: HEDGING/SCREENING SHRUBS (Conifers and Broadleaf Evergreens)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS</u>	<u>SIZE</u>
Chamaecyparis lawsoniana 'Ellwoodii'	Ellwood Cypress	5	#5 pot
Cryptomeria japonica 'Elegans'	Plume Cryptomeria	7b	#5 pot
Cupressus macrocarpa	Monterey Cypress	7	#5 pot
Ligustrum ovalifolium	California Privet	7	#5 pot
Lonicera tartarica 'Rosea'	Tartarian Honeysuckle	2	#5 pot
Osmanthus armatus	Chinese Osmanthus	7	#5 pot
Photinia x fraseri	Photinia	7	1.0m ht.
Prunus laurocerasus	Cherry Laurel	8	1.0m ht.
Prunus laurocerasus 'Reynvaanii'	Russian Laurel	6	1.0m ht.
Prunus lusitanica	Portugal Laurel	7b	1.0m ht.
Syringa vulgaris (cult.)	French Lilac	2b	#5 pot
Taxus x media 'Hatfieldii' 'Hicksii'	Hatfield Yew Hick's Yew	4 5	1.5m ht. 1.5m ht.
Thuja occidentalis 'Aureospicata' 'Brandon' 'Fastigiata'	Cedar Cedar Pyramidal Cedar	3 2 3	1.5m ht. 1.5m ht. 1.5m ht.
Tsuga canadensis	Eastern Hemlock	4	1.5m ht.
Viburnum tinus 'Robustum'	Laurustinus	7	#5 pot

SCHEDULE C: BUFFER PLANT MATERIAL

C.5: TRESPASS INHIBITING SHRUBS

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS ZONE</u>	<u>SIZE</u>
Berberis x chenaultii	Chenault Barberry	6	#5 pot
Berberis darwinii	Darwin's Barberry	7	#5 pot
" julianae	Wintergreen Barberry	6b	#5 pot
Chaenomeles speciosa	Flowering Quince	5b	#5 pot
Elaeagnus pungens 'Maculata'	Thorny Elaeagnus	7b	#5 pot
Ilex aquifolium	English Holly	7	#5 pot
Ilex aquifolium 'San Gabriel'	"	6	#5 pot
Mahonia aquifolium	Oregon Grape	5	#5 pot
Mahonia x 'Charity'		7	#5 pot
Osmanthus armatus	Chinese Osmanthus	7	#5 pot
Pyracantha coccinea 'Kasan'	Firethorn	6	#5 pot
Pyracantha fortuneana 'Cherri Berri'	"	6	#5 pot
Pyracantha x 'Mohave'	"	6	#5 pot
Pyracantha x 'O.	"	5	#5 pot
Rosa acicularis	Prickly Rose	1	#2 pot
Rosa sp.	Shrub Roses	2-3	#2 pot
Yucca filamentosa	Adam's Needle	4	#5 pot
Yucca glauca	Spanish Bayonet	3	#5 pot

SCHEDULE C: BUFFER PLANT MATERIAL

C.6a: SHRUBS FOR SCREENING (DECIDUOUS)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS</u>	<u>SIZE</u>
Amelanchier alnifolia	Saskatoonberry	1	#5 pot
Caragana arborescens	Siberian Peashrub	2	#5 pot
Clethra alnifolia	Summersweet	5	#2 pot
Cornus stolonifera	Red Osier Dogwood	1b	#2 pot
Cornus alba	Tartarian Dogwood	2	#2 pot
Cotinus coggygria 'Royal Purple'	Smoke Tree	5	#5 pot
Cotoneaster acutifolius	Peking Cotoneaster	2	#1 pot
Elaeagnus commutata	Silver Berry	2	#5 pot
Euonymus alata	Winged Burning Bush	3	#5 pot
Hippophae rhamnoides	Sea Buckthorn	2b	#5 pot
Hydrangea paniculata 'Grandiflora'	P.G. Hydrangea	3b	#5 pot
Kolkwitzia amabilis	Beauty Bush	5b	#5 pot
Lonicera korolkowii zabelli	Zabel's Honeysuckle	2	#2 pot
Lonicera maackii	Amur Honeysuckle	2b	#2 pot
Lonicera tartarica 'Rosea'	Tartarian Honeysuckle	2	#2 pot
Philadelphus x virginalis	Mock Orange	3b	#2 pot
Prunus tomentosa	Manchu Cherry	2	#2 pot
Prunus triloba 'Multiplex'	Chinese Flowering	2b	#2 pot
Syringa vulgaris (cult.)	French Lilac	2b	#5pot
Viburnum x burkwoodii	Burkwood Viburnum	5	#5 pot

C.6a: SHRUBS FOR SCREENING (DECIDUOUS) (cont.)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS</u>	<u>SIZE</u>
Viburnum cassinoides	Witherod	2b	#5 pot
Viburnum dentatum	Arrow Wood	4	#5 pot
Viburnum opulus 'Roseum'	Common Snowball	2b	#5 pot
Weigelia x 'Centennial'	Weigelia	2	#5 pot

SCHEDULE C: BUFFER PLANT MATERIAL

C.6b: SHRUBS FOR SCREENING (BROADLEAF EVERGREENS)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>HARDINESS</u>	<u>SIZE</u>
Arbutus unedo	Strawberry Tree	8b	#5 pot
Camellia japonica (var.)	Camellia	8b	#5 pot
Choisya ternata	Mexican Orange Blossom	8	#5 pot
Elaeagnus x ebbingei	Silver Berry	7	#5 pot
Elaeagnus pungens 'Maculata'	Thorny Elaeagnus	7b	#5 pot
Escallonia rubra	Escallonia	8b	#5 pot
Ligustrum japonicum	Japanese Privet	8b	#2 pot
Photinia x fraseri	Photinia	7	#5 pot
Pieris japonica	Japanese Andromeda	5b	#5 pot
Prunus laurocerasus 'Reynvaanii'	Cherry Laurel Russian Laurel	8 6	#5 pot #5 pot
Prunus lusitanica	Portugal Laurel	7b	#5 pot
Rhododendron varieties w/ mature ht. >1.5m	Rhododendron	4-5	#7 pot
Viburnum tinus 'Robustum'	Laurustinus	8	#5 pot

SCHEDULE C: BUFFER PLANT MATERIAL

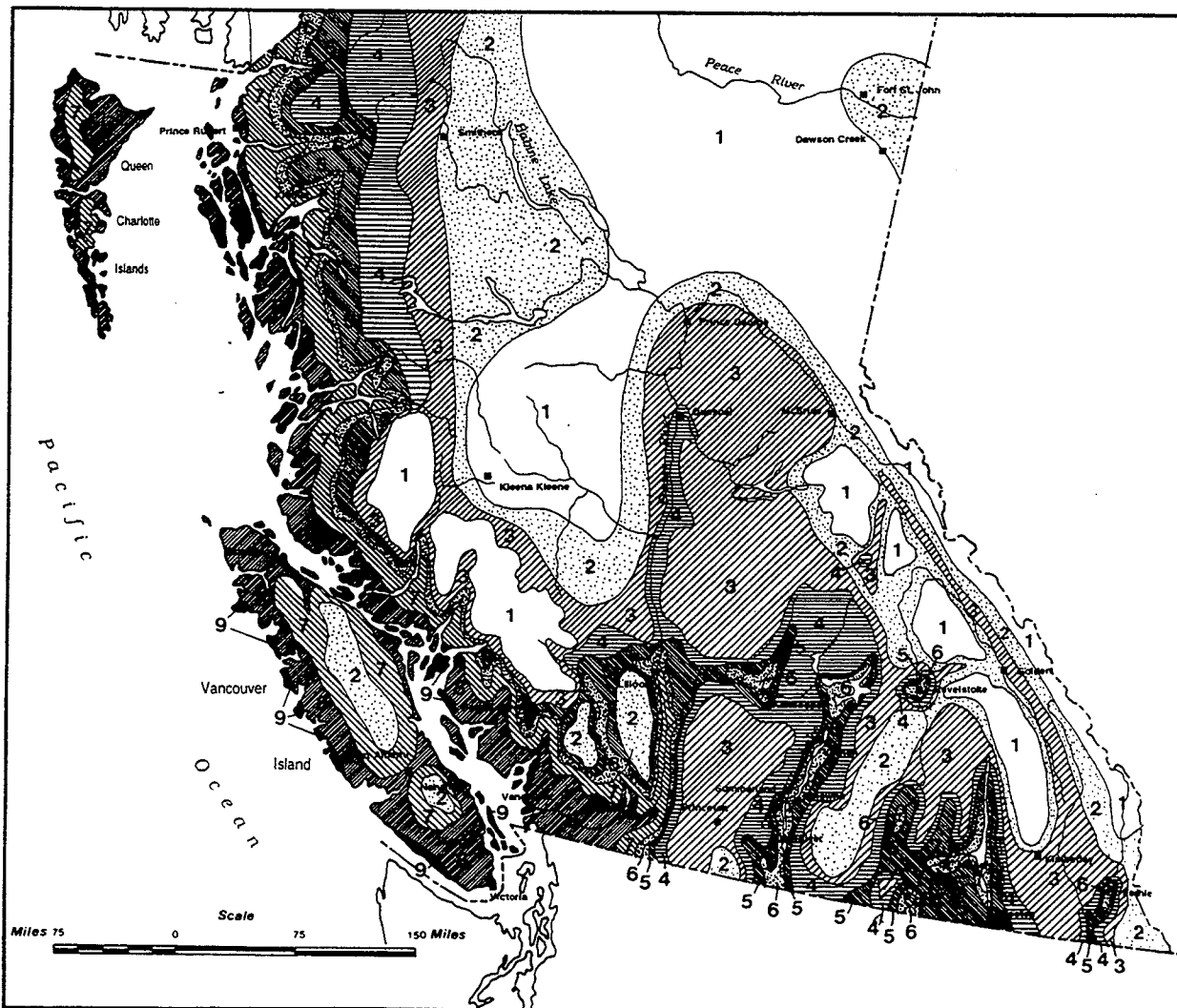
APPENDIX A: MAP OF PLANT HARDINESS ZONES IN B.C.

(Source: Canada Dept. of Agriculture, 1967)

"...The map is based on a formula that takes into consideration several meteorological factors affecting the hardiness of a plant in a given location. The most important element in plant survival is the minimum temperature during the winter. Other important considerations are the length of the frost-free period, summer rainfall, maximum temperatures, snow cover and wind.

The hardiness areas have been divided into 10 zones. The one marked 0 is the coldest. Other zones are progressively milder, to 9, which is the mildest. A given zone on this map corresponds only approximately to a zone of the same number in the United States Department of Agriculture Plant Hardiness Zone Map, which has been in use in Canada for a number of years. This present map, however, presents more detail for Canada. Each zone has been subdivided into a light and dark section to represent, respectively, the milder and colder portions of the zone.

...Small areas with peculiar microclimates often exist within a zone. These areas are colder or milder than the surrounding area. They are usually too small to locate on the hardiness map or they may not have been recorded. In addition, sharp changes in elevation, as found in mountainous or hilly regions, cause a difference in climate that cannot be accurately indicated on the map. The user should also remember that the zone lines are arbitrarily drawn and that the zones merge gradually into each other. Consequently, conditions near the border of one zone may closely approximate those of an adjacent zone."



SCHEDULE D: FENCING SPECIFICATIONS

D.1: SOLID WOOD FENCE

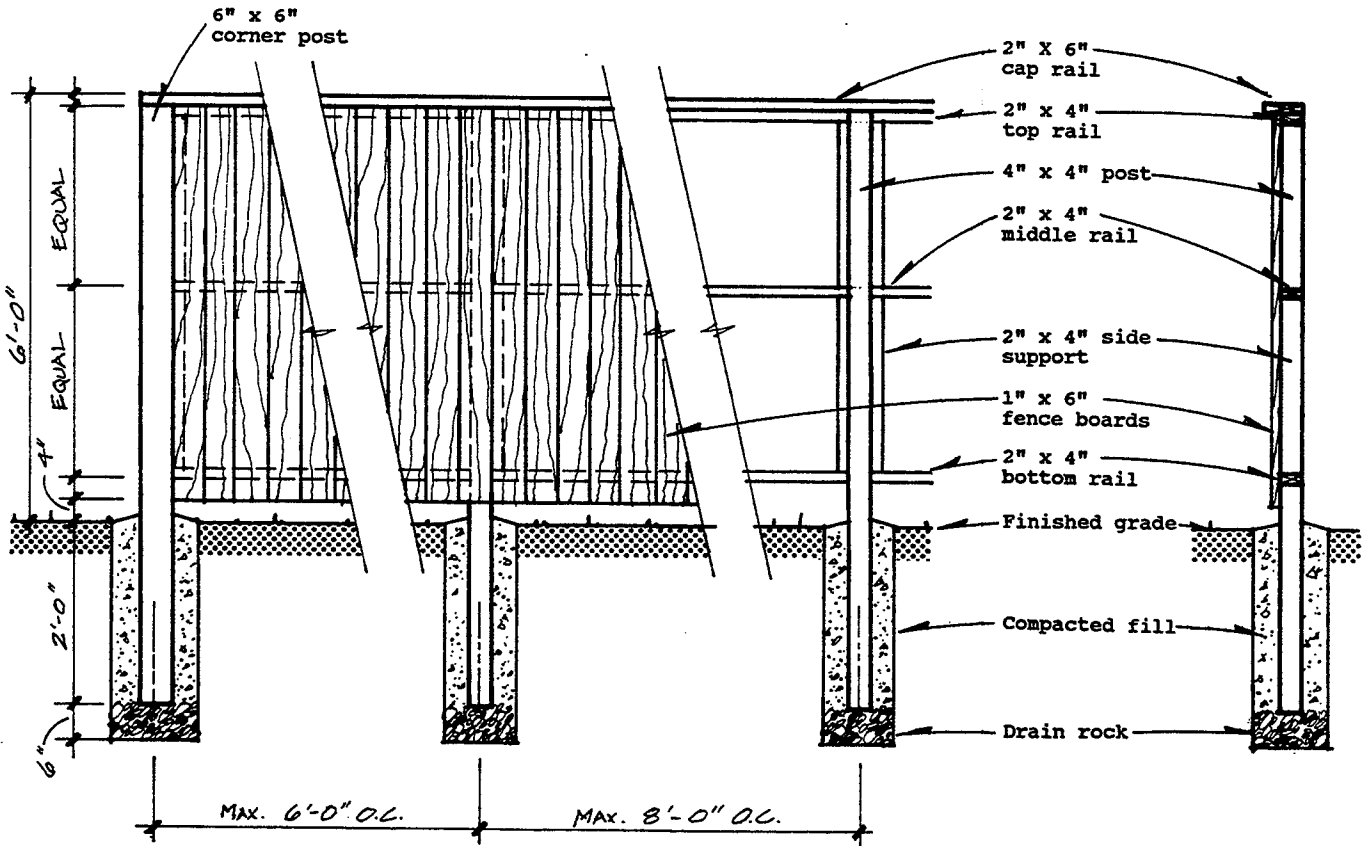
1. All posts and rails shall be rough sawn of "No. 1 Structural" grade, pressure treated with a wood preservative non-toxic to surrounding plant material, in accordance with CSA Standard 080.2 and compatible with staining requirements below. Stain to match fence boards.
2. All fence boards and planks shall be rough sawn of "Quality Fencing" grade, finished with penetrating stain with preservative, conforming to CGSB Standards 1-GP145M and 204M, applied to all surfaces prior to installation and on any cuts thereafter.
3. Line posts shall be minimum 8.0 ft. in length and at least (standard) 4"x 4".
4. Corner posts shall be minimum 8.0 ft. in length and at least (standard) 6"x 6".
5. Fence rails (min. 3) shall be maximum 7.5 ft. in length and at least (standard) 2"x 4".
6. Cap rails shall be at least (standard) 2"x 6". Cant to drain.
7. The finished height of opaque fencing shall be at least 6.0 ft.
8. All nails used in fence construction shall meet the following specifications:
 - 8.1 Minimum gauge of nails used - #9, common in post/rail connections
 - 8.2 Minimum gauge of nails used - #11.5, common in rail/fence board connections
 - 8.3 Galvanized - CSA G164
9. Line posts shall be placed no more than 8.0 ft. O.C. and be firmly anchored in the soil to a depth of not less than 2.0 ft.
10. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.1 drawings which forms part of these specification.

SCHEDULE D: FENCING SPECIFICATIONS

D.1: Solid Wood Fence

Front Elevation

Section



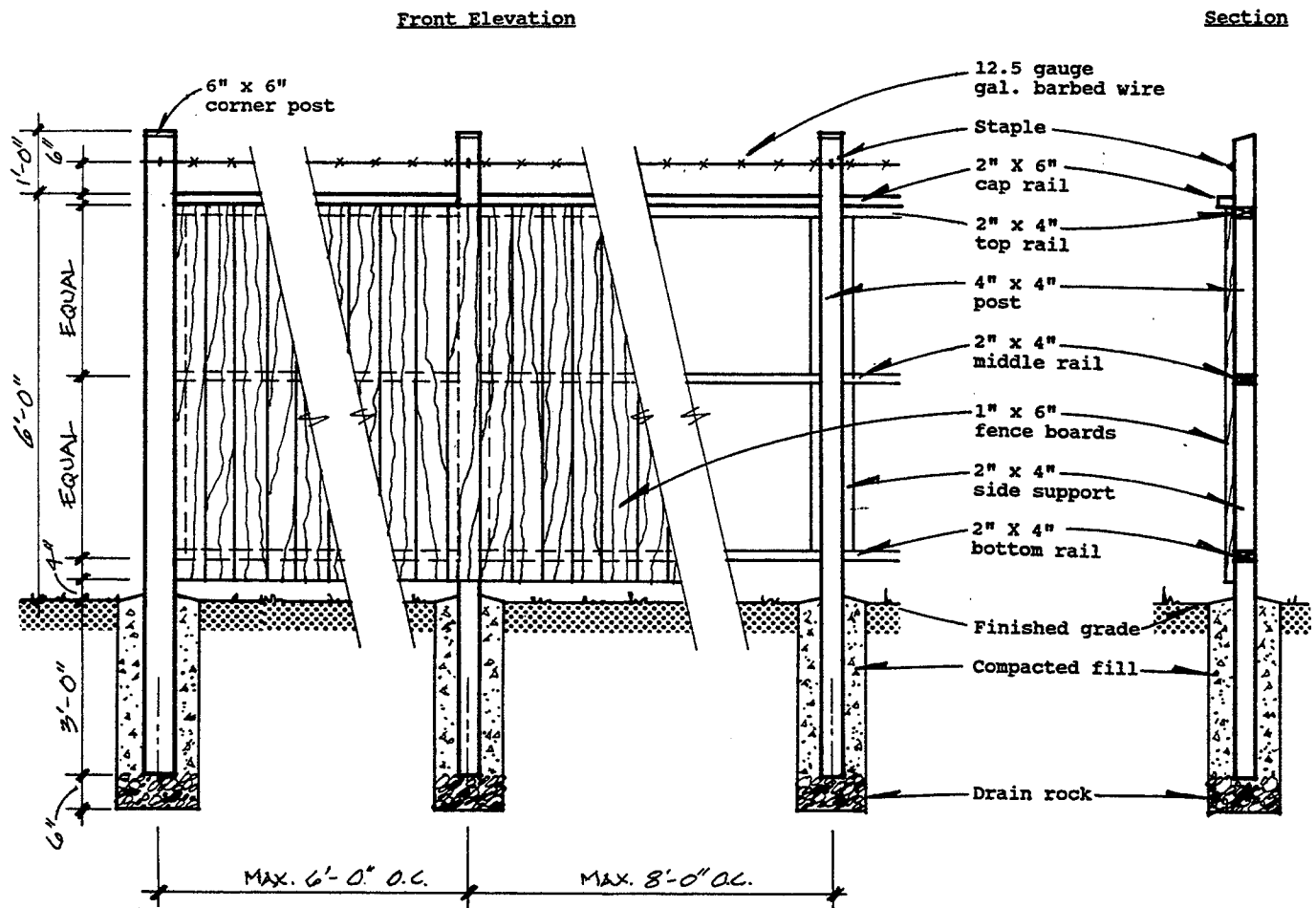
SCHEDULE D: FENCING SPECIFICATIONS

D.2: SOLID WOOD FENCE WITH ONE STRAND BARBED WIRE

1. All posts and rails shall be rough sawn of "No. 1 Structural" grade, pressure treated with a wood preservative non-toxic to surrounding plant material, in accordance with CSA Standard 080.2 and compatible with staining requirements below. Stain to match fence boards.
2. All fence boards and planks shall be rough sawn of "Quality Fencing" grade, finished with penetrating stain with preservative, conforming to CGSB Standards 1-GP145M and 204M, applied to all surfaces prior to installation and on any cuts thereafter.
3. Line posts shall be minimum 10.0 ft. in length and at least (standard) 4"x 4".
4. Corner posts shall be minimum 10.0 ft. in length and at least (standard) 6"x 6".
5. Fence rails (min. 3) shall be maximum 7.5 ft. in length and at least (standard) 2"x 4".
6. Cap rails shall be maximum 7.5 ft in length and at least (standard) 2"x 6". Cant to drain.
7. The finished height of opaque fencing shall be at least 6.0 ft.
8. The barbed wire shall meet the following specifications:
 - 8.1 Number of wire strands - 2
 - 8.2 Minimum wire gauge - 12.5 A.W.G.
 - 8.3 Maximum spacing between barbs - 6"
 - 8.4 Number of points per barb - 4
9. Fastening materials (nails and staples) shall meet the following specifications:
 - 9.1 Minimum gauge of nails used - #9, common in post/rail connections
 - 9.2 Minimum gauge of nails used - #11.5, common in rail/fence board connections
 - 9.3 Minimum wire gauge of staple - 9.0 A.W.G.
 - 9.4 Minimum length of staple - 2"
 - 9.5 Galvanized - CSA G164
10. Line posts shall be placed no more than 8.0 ft. O.C. and be firmly anchored in the soil to a depth of not less than 3.0 ft.
11. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.1 drawing which forms part of these specification.

SCHEDULE D: FENCING SPECIFICATIONS

D.2: Solid Wood Fence with One Strand Barbed Wire



SCHEDULE D: FENCING SPECIFICATIONS

D.3: STANDARD BARBED WIRE FENCE

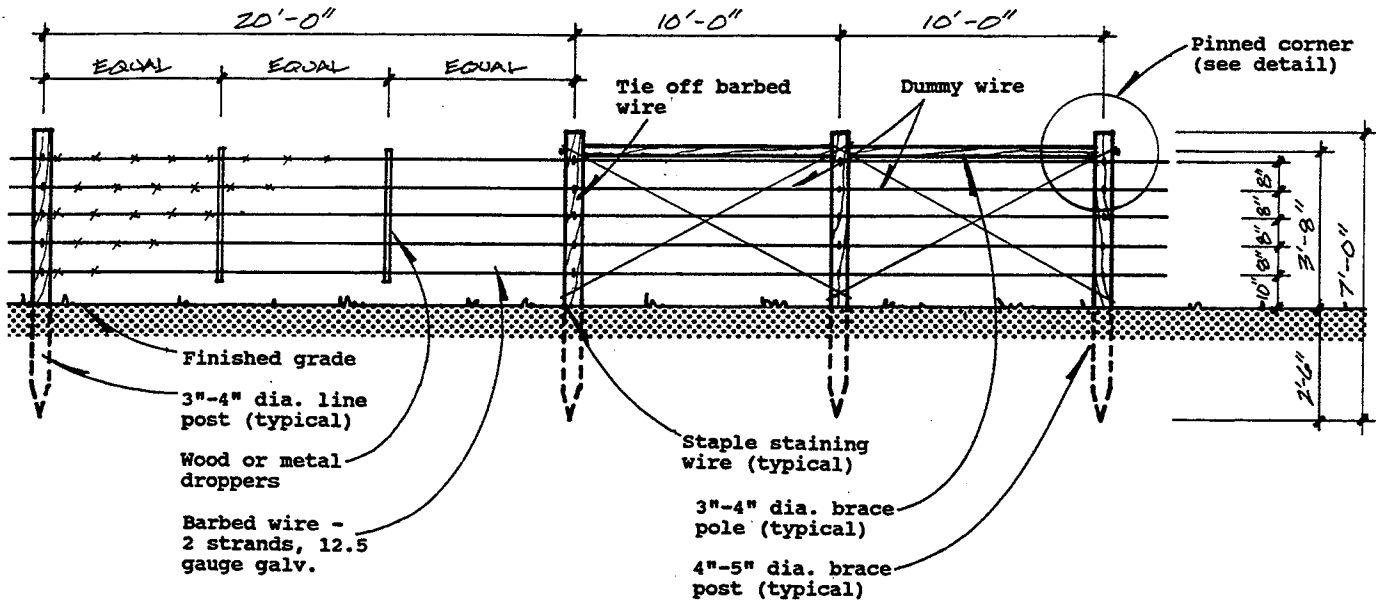
1. All posts and brace poles shall be pressure treated in accordance with CSA Standard 080.5 using woodpreservative non-toxic to surrounding plant material.
2. Line posts shall be 7.0 ft. in length and 3" - 4" in diameter.
3. Corner and brace posts shall be 7.0 ft. in length and 4" - 5" in diameter.
4. Bracing poles shall be 3" - 4" in diameter.
5. All line and corner posts shall be machine pointed to permit driving of posts.
6. Barbed wire shall meet the following specifications:
 - 6.1 Number of strands - 2
 - 6.2 Minimum wire gauge - 12.5 A.W.G.
 - 6.3 Maximum spacing between barbs - 6"
 - 6.4 Number of points per barb - 4
 - 6.5 Galvanized - CSA G164
7. Straining wire shall meet the following specifications:
 - 7.1 Number of strands - 2
 - 7.2 Minimum wire gauge - 9.75 A.W.G.
 - 7.3 Galvanized - CSA G164
8. The staples used in fence construction shall meet the following specifications:
 - 8.1 Minimum wire gauge - 9.0 A.W.G
 - 8.2 Minimum length - 2"
 - 8.3 Galvanized - CSA G164
9. Line posts shall be placed no more than 20.0 ft. apart and be firmly anchored in the soil to a depth of not less than 30".
10. Corner brace assemblies shall be constructed as shown in the Schedule D.3 drawings.
11. Intermediate brace assemblies shall be constructed as indicated in the Schedule D.3 drawings and spaced as required by terrain or every 1320.0 ft. maximum.
12. Barbed wire spacing - (starting from ground), five wires spaced 10", 8", 8", 8", 8" (top wire 42" above ground level), (see Schedule D.3 drawings)
13. Barbed wire shall be prestretched prior to tying off. Tension wire to 600 lbs., relax to 250 lbs., then staple securely to brace assemblies. Securely staple barbed wire to line allowing for wire movement.
14. Wooden droppers shall be installed "interwoven" and securely figure-eight wire tied to every line wire between posts. Prefabricated clip-on galvanized sheet metal droppers may be approved.
15. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.3 drawings which forms part of these specifications.

SCHEDULE D: FENCING SPECIFICATIONS

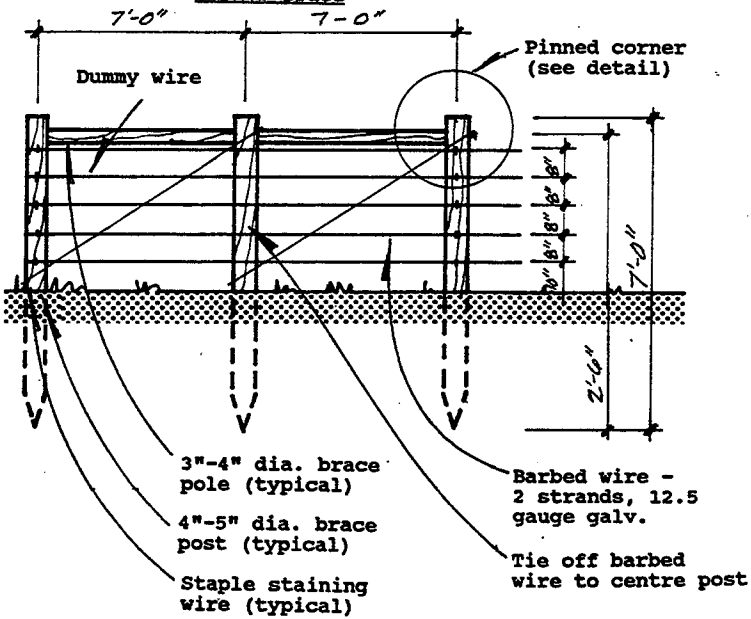
D.3: Standard Barbed Wire Fence

Fence Run (typical)

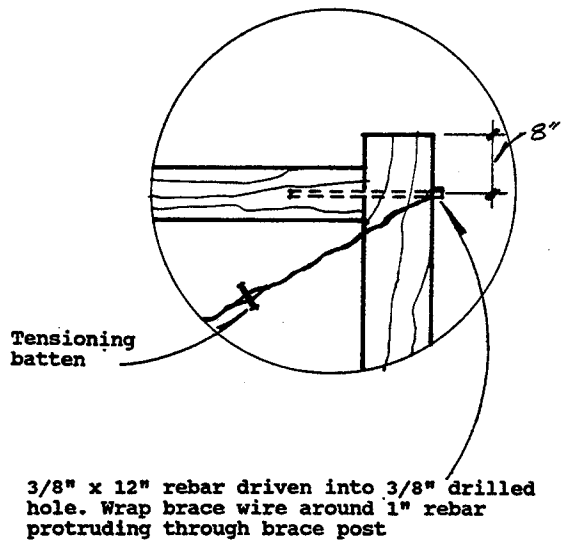
Intermediate Brace Assemblies



Corner Brace



Pinned Corner



SCHEDULE D: FENCING SPECIFICATIONS

D.4: WIRE FABRIC FENCE WITH ONE STRAND BARBED WIRE

1. All posts and brace poles shall be pressure treated in accordance with CSA Standard 080.5, using a wood preservative non-toxic to surrounding plant material.
2. Line posts shall be 8.0 ft. in length and 4" - 5" in diameter.
3. Corner and brace posts shall be 8.0 ft. in length and 5" - 6" in diameter.
4. Bracing poles shall be 3" - 4" in diameter.
5. All line and corner posts shall be machine pointed to permit driving of posts.
6. The wire mesh fencing material shall meet the following specifications:
 - 6.1 Minimum wire gauge - 12.5 A.W.G.
 - 6.2 Overall Height - 48"
 - 6.3 Min. number of horizontal strands - 9
 - 6.4 Max. spacing between horizontal strands - 8"
 - 6.5 Max. spacing between vertical - 16"
 - 6.6 Wire intersections of non-slip design
 - 6.7 Galvanized - CSA G164
7. The barbed wire fencing material shall meet the following specifications:
 - 7.1 Number of strands - 2
 - 7.2 Minimum wire gauge - 12.5 A.W.G.
 - 7.3 Maximum spacing between barbs - 6"
 - 7.4 Number of points per barb - 4
 - 7.5 Galvanized - CSA G164
8. Brace wire shall meet the following specifications:
 - 8.1 Number of strands - 2
 - 8.2 Minimum wire gauge - 12.5 A.W.G.
 - 8.3 Galvanized - CSA G164
9. The staples used in fence construction shall meet the following specifications:
 - 9.1 Minimum wire gauge - 9.0 A.W.G.
 - 9.2 Minimum length - 1.75"
 - 9.3 Galvanized - CSA G164
10. Line posts shall be placed no more than 10.0 ft. apart and be firmly anchored in the soil to a depth not less than 30".
11. Corner brace assemblies shall be constructed as indicated in the Schedule D.4 drawings.
12. An intermediate brace assembly shall be constructed as shown in the Schedule D.4 drawings and spaced as required by terrain or every 660.0 ft.
13. Barbed wire shall be prestretched prior to tying off. Tension wire to 600 lbs., relax to 250 lbs., then staple securely to brace assemblies. Securely staple barbed wire to line posts allowing for wire movement.

continued

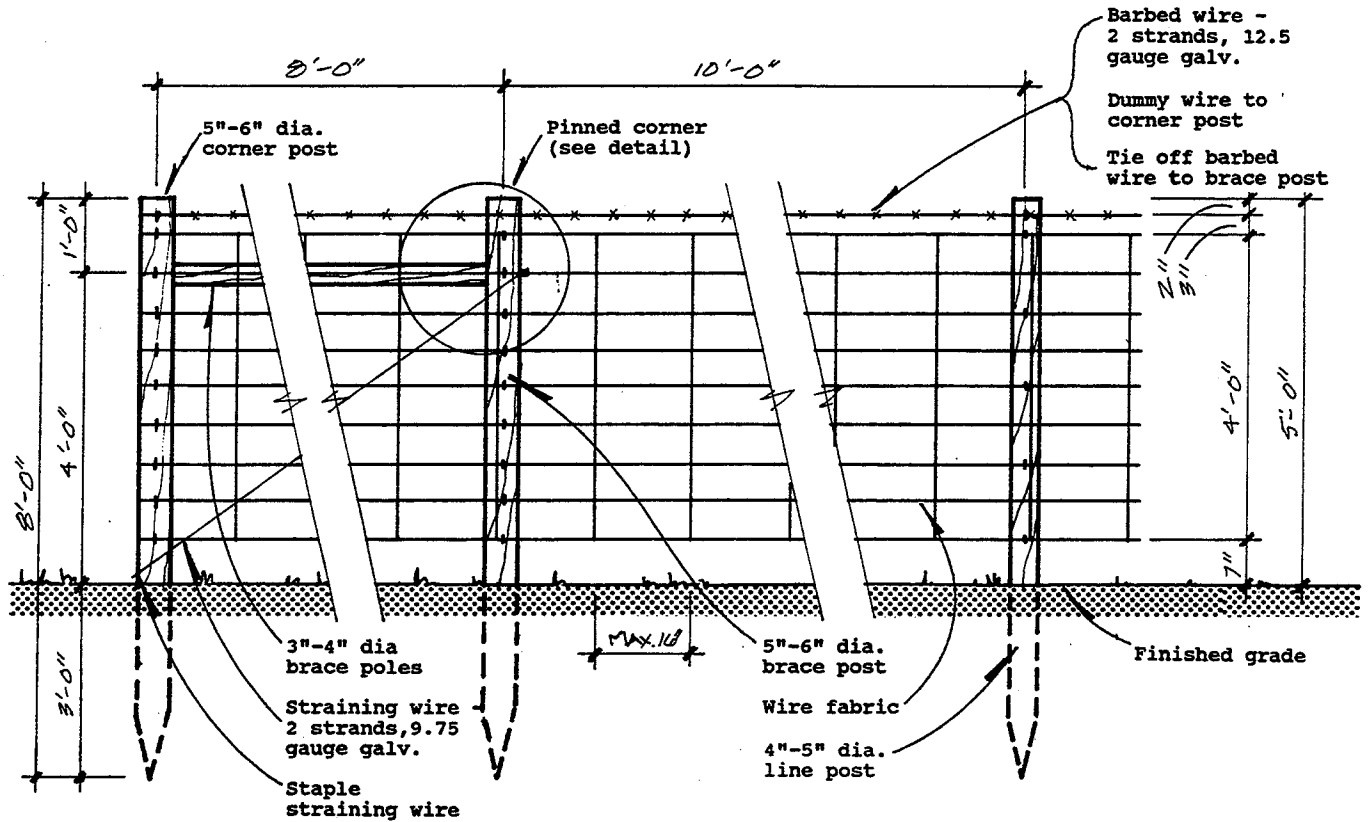
SCHEDULE D: FENCING SPECIFICATIONS

D.4: WIRE FABRIC FENCE WITH ONE STRAND BARBED WIRE (continued)

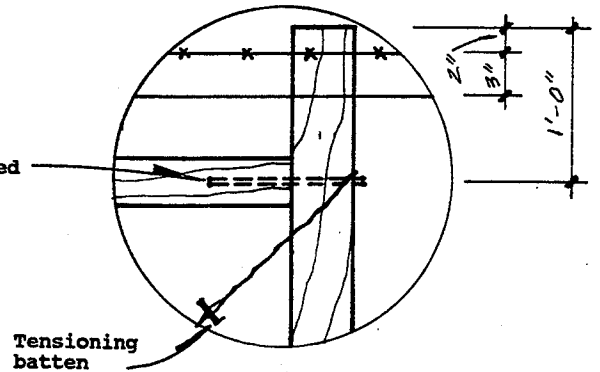
14. Wire mesh shall be stretched and securely attached by staples at each wire intersection with the brace assembly posts. At line posts, wire mesh shall be attached by staples at alternate wire intersections with posts. (see Schedule D.4 drawings) Securely staple to line posts allowing for wire movement.
15. Wire mesh and barbed wire shall be spaced as shown in the Schedule D.4 drawings.
16. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.4 drawings which forms part of these specifications.

SCHEDULE D: FENCING SPECIFICATIONS

D.4: Wire Fabric Fence with One Strand Barbed Wire



3/8" x 12" rebar driven into 3/8" drilled hole. Wrap brace wire around 1" rebar protruding through brace post



SCHEDULE D: FENCING SPECIFICATIONS

D.5: WIRE FABRIC FENCE WITH TWO STANDS BARBED WIRE

1. All posts and brace poles shall be pressure treated in accordance with CSA Standard 080.5, using a wood preservative non-toxic to surrounding plant material.
2. Line posts shall be 8.0 ft. in length and 4" - 5" in diameter.
3. Corner and brace posts shall be 8.0 ft. in length and 5" - 6" in diameter.
4. Bracing poles shall be 3" - 4" in diameter.
5. All line and corner posts shall be machine pointed to permit driving of posts.
6. The wire mesh fencing material shall meet the following specifications:
 - 6.1 Minimum wire gauge - 12.5 A.W.G.
 - 6.2 Overall Height - 48"
 - 6.3 Min. number of horizontal strands - 9
 - 6.4 Max. spacing between horizontal strands - 8"
 - 6.5 Max. spacing between vertical stays - 16"
 - 6.6 Wire intersections of non-slip design
 - 6.7 Galvanized - CSA G164
7. The barbed wire fencing material shall meet the following specifications:
 - 7.1 Number of strands - 2
 - 7.2 Minimum wire gauge - 12.5 A.W.G.
 - 7.3 Maximum spacing between barbs - 6"
 - 7.4 Number of points per barb - 4
 - 7.5 Galvanized - CSA G164
8. Brace wire shall meet the following specifications:
 - 8.1 Number of strands - 2
 - 8.2 Minimum wire gauge - 12.5 A.W.G.
 - 8.3 Galvanized - CSA G164
9. The staples used in fence construction shall meet the following specifications:
 - 9.1 Minimum wire gauge - 9.0 A.W.G.
 - 9.2 Minimum length - 1.75"
 - 9.3 Galvanized - CSA G164
10. Line posts shall be placed no more than 10.0 ft. apart and be firmly anchored in the soil to a depth not less than 30".
11. Corner brace assemblies shall be constructed as indicated in the Schedule D.5 drawings.
12. An intermediate brace assembly shall be constructed as shown in the Schedule D.5 drawings and spaced as required by terrain or every 660.0 ft.
13. Barbed wire shall be prestretched prior to tying off. Tension wire to 600 lbs., relax to 250 lbs., then staple securely to brace assemblies. Securely staple barbed wire to line posts allowing for wire movement.

continued

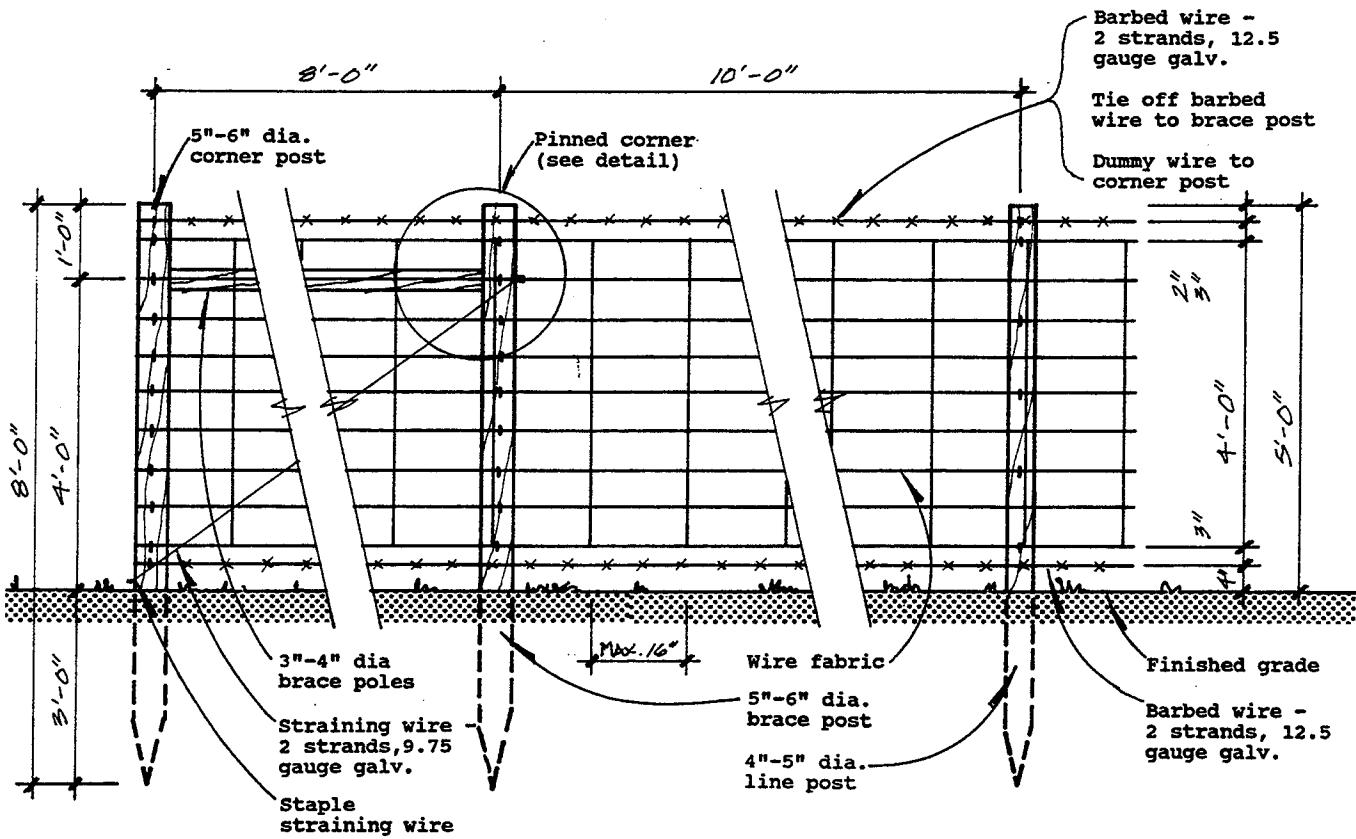
SCHEDULE D: FENCING SPECIFICATIONS

D.5: WIRE FABRIC FENCE WITH TWO STANDS BARBED WIRE (continued)

14. Wire mesh shall be stretched and securely attached by staples at each wire intersection with the brace assembly posts. At line posts, wire mesh shall be attached by staples at alternate wire intersections with posts. (see Schedule D.5 drawings) Securely staple to line posts allowing for wire movement.
15. Wire mesh and barbed wire shall be spaced as shown in the Schedule D.5 drawings.
16. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.5 drawings which forms part of these specifications.

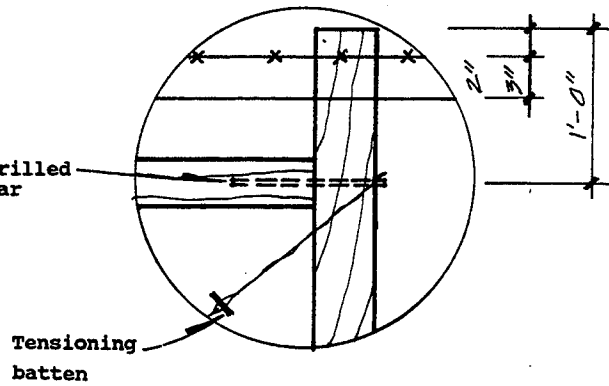
SCHEDULE D: FENCING SPECIFICATIONS

D.5: Wire Fabric Fence with Two Strands Barbed Wire



Pinned Corner

3/8" x 12" rebar driven into 3/8" drilled hole. Wrap brace wire around 1" rebar protruding through brace post



SCHEDULE D: FENCING SPECIFICATIONS

D.6: Chain Link Fence

1. Line posts shall be constructed from 2" standard galvanized steel pipe (0.125" wall thickness), 8.5 ft. in length. Galvanized to CSA G164 standard.
2. Corner and straining posts shall be constructed from 2.5" standard galvanized steel pipe (0.125" wall thickness), 10 ft. in length. Galvanized to CSA G164 standard.
3. Diagonal corner bracing shall be constructed from 1.25" standard galvanized steel pipe. Galvanized to CSA G164 standard.
4. Posts shall be securely anchored in the soil to depths as indicated in the Schedule D.6 drawings using 2,500 P.S.I. concrete extending from the soil surface to 6" below the bottom of the post. Posts shall be spaced no more than 8.0 ft. O.C.
5. The chain link fencing material shall meet the following specifications:
 - 5.1 Minimum height - 5'-8"
 - 5.2 Minimum wire gauge - 11.0 A.W.G.
 - 5.3 Maximum mesh size - 2"
 - 5.4 Be galvanized (to CSA G164) or plastic coated
6. The barbed wire fencing material shall meet the following specifications:
 - 6.1 Number of strands - 2
 - 6.2 Minimum wire gauge - 12.5 A.W.G.
 - 6.3 Maximum spacing between barbs - 6"
 - 6.4 Number of points per barb - 4
 - 6.5 Galvanized - CSA G164
7. All accessory materials shall meet the following specifications:
 - 7.1 Post caps and extension arms: of pressed steel or cast or malleable iron and galvanized to CSA G164 standard.
 - 7.2 Tension wire: bottom and top wires 6.0 gauge medium tensile galvanized wire.
 - 7.3 Tie wire: 9.0 gauge aluminum wire for mesh fixing to line posts.
 - 7.4 Hog ring clips: 9.0 gauge galvanized steel wire clips for mesh fixing to top and bottom tension wires.
 - 7.5 Tension bar: minimum 1/4" x 3/4" galvanized mild steel flat bar.
 - 7.6 Tension bands: 1/8" x 3/4" galvanized formed mild steel flatbars with galvanized bolts and nuts for all tension bar fixing.
8. All terminal posts (posts at ends, corners or intersections), all line posts and any intermediate tensioning posts shall be set plumb into concrete footings in augured or dug holes to the depths and regular spacing as indicated in the Schedule D.6 drawings.

continued

SCHEDULE D: FENCING SPECIFICATIONS

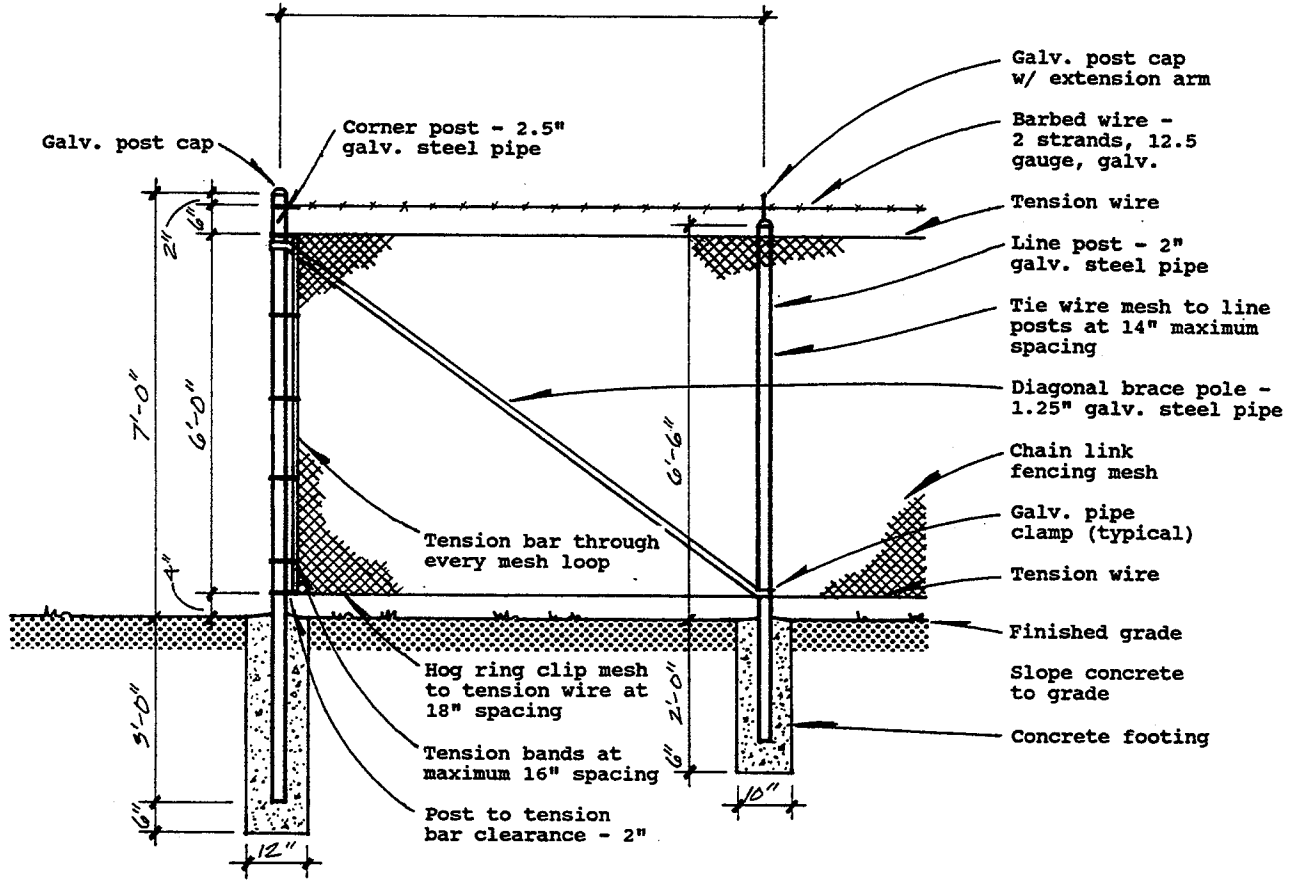
D.6: CHAIN LINK FENCE (continued)

9. All posts shall be securely fitted with the appropriate weathertight caps and extension arms as shown in the schedule D.6 drawings.
10. Top and bottom tension wires shall be securely fixed taut and sag free to terminal posts and any intermediate tensioning posts. Top tension wire shall pass through line post tops.
11. Intermediate tensioning assemblies shall be provided where terminal posts are more than 500.0 ft. apart, and at any subsequent 500.0 ft. spacing, to consist of a straining post with diagonal pipe braces to adjoining line posts each way. (see Schedule D.6 drawings)
12. Chain link fencing mesh shall be stretched between terminal posts and any intermediate tensioning posts using proper equipment, and secured with tension bars and bands, tie wire and clips all in accordance with the requirements of the Schedule D.6 drawings. Joins in the length of wire mesh shall be made by weaving the mesh together with a single wire picket to form a neat continuous mesh.
13. Barbed wire shall be installed in the slots of all extension arms and secured to extension arms at terminal and intermediate tensioning posts taut and free of sags.
14. The fence shall be constructed in accordance with these specifications and details provided in the Schedule D.6 drawings which forms part of these specifications.

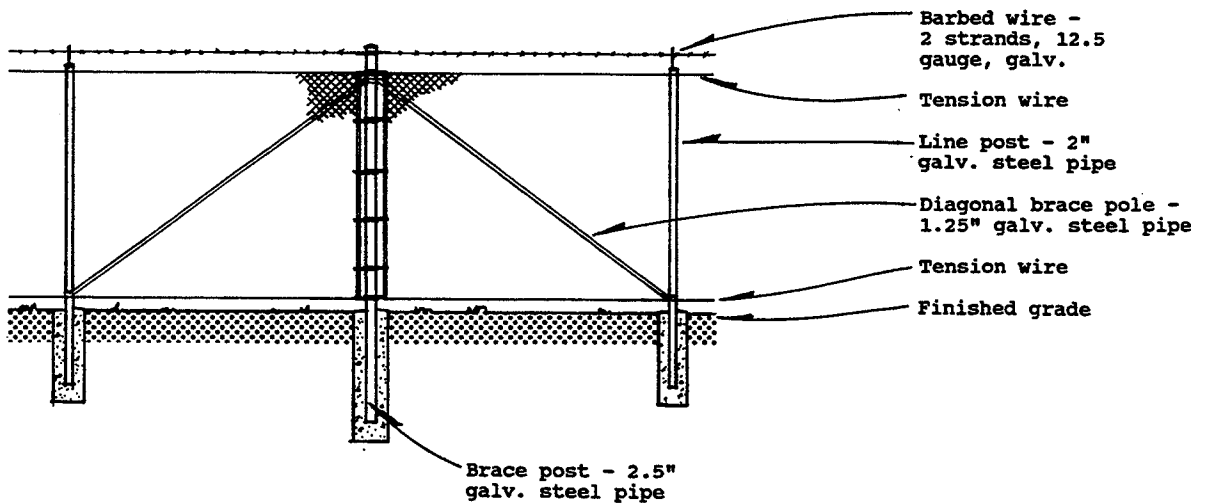
SCHEDULE D: FENCING SPECIFICATIONS

D.6: Chain Link Fence

Terminal Tensioning Assemblies



Intermediate Tensioning Assemblies



Not to Scale

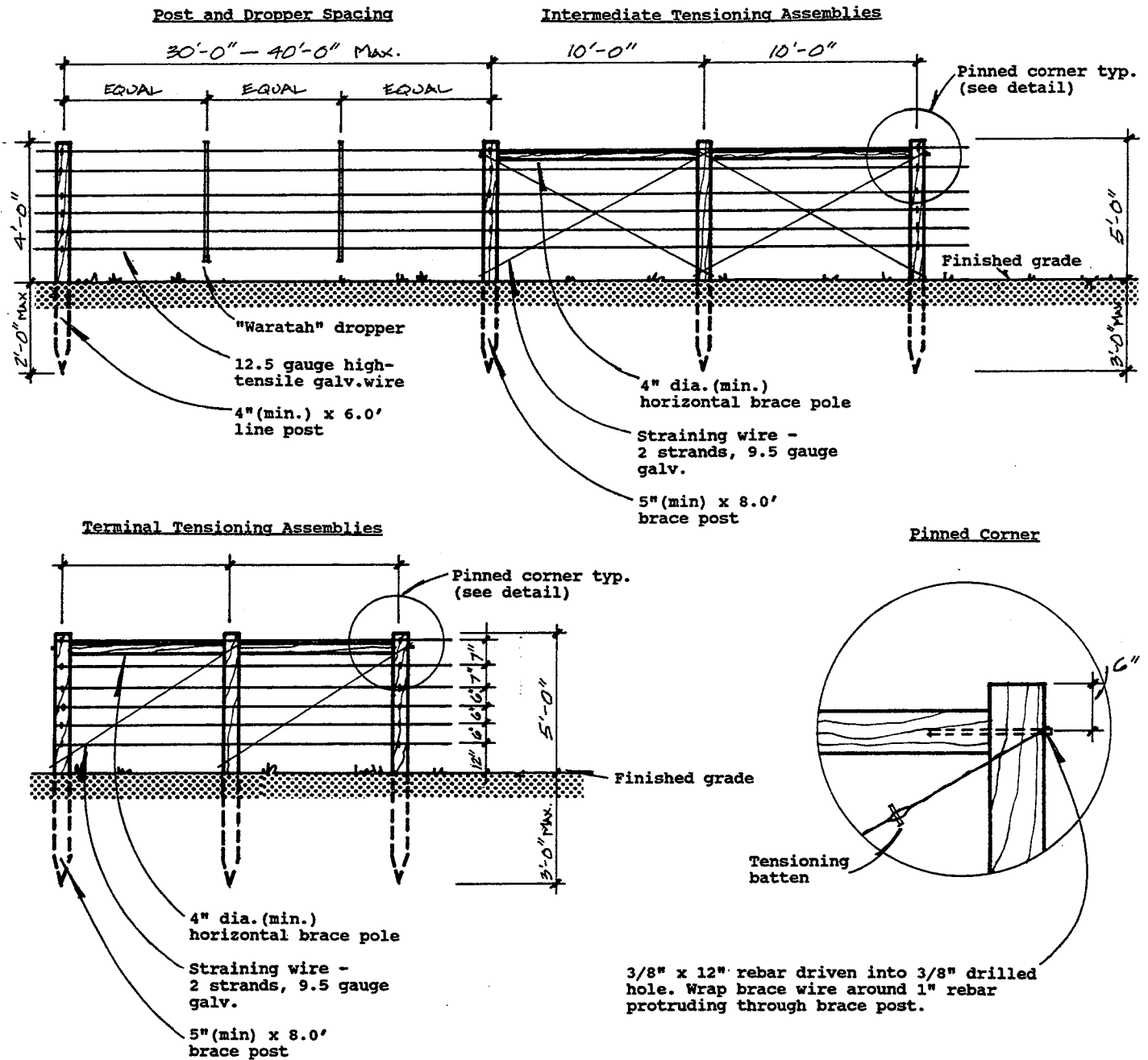
SCHEDULE D: FENCING SPECIFICATIONS

D.7: HIGH-TENSILE SMOOTH WIRE FENCE

1. The High-Tensile smooth wire shall meet the following specifications:
 - 1.1 Type - 12.5 gauge high tensile galvanized
 - 1.1.1 Breaking load - 1250 lbf minimum
 - 1.1.2 Tensile strength - 180,000 p.s.i. minimum
 - 1.1.3 Zinc coat weight - 0.80 oz/ft.2 (class 3)
 - 1.2 Spacing - (starting from ground), six wires spaced 12", 6", 6", 6", 7" & 7" (top wire 44" above the ground), (See Schedule D.7 detail drawings)
 - 1.3 Tension - use permanent in-line wire strainers to tension each wire to 250 lbs.
 - 1.4 Joints - all line wire splicing shall be by mechanical connector. (i.e. "Nicropress" or "Wirelink") Use knot or mechanical connector at post tie off.
 - 1.5 Staples - minimum 2" galvanized slash point.
 - 1.6 Droppers - "Waratah" dropper - 37" length
2. The fence posts shall meet the following specifications:
 - 2.1 All posts shall be pressure treated in accordance with CSA Standard 080.5 using a wood preservative non-toxic to surrounding plant material.
 - 2.2 Single Span Strainer Assembly - both driven posts, 5"x 8.0 ft., driven 42"-48" deep in suitable soil. Horizontal top brace, minimum 4"x 10.0 ft. (see Schedule D.7 detail drawings)
 - 2.3 Line Posts - minimum 4" x 6.0 ft driven 26" into ground, (in zones of severe frost lift use a 7.0 ft. post), spaced 30'-0" to 40'-0" apart.(see Schedule D.7 detail drawings)
 - 2.4 Dip Posts - minimum 5" x 8.0 ft. driven perpendicular 50" into ground. (posts with a lift greater than 10" shall require a footing - see Ministry of Agriculture publication listed below.)
 - 2.5 Twich Sticks - one 2" x 2" x 30" per single assembly.
3. The fence shall be constructed in accordance with these specifications, the details provided in the Schedule D.7 drawings which form part of these specifications, and in conjunction with the Ministry of Agriculture, Fisheries and Food publication, "An Introduction to High - Tensile Smooth Wire Fencing".

SCHEDULE D: FENCING SPECIFICATIONS

D.7: High-Tensile Smooth Wire Fence

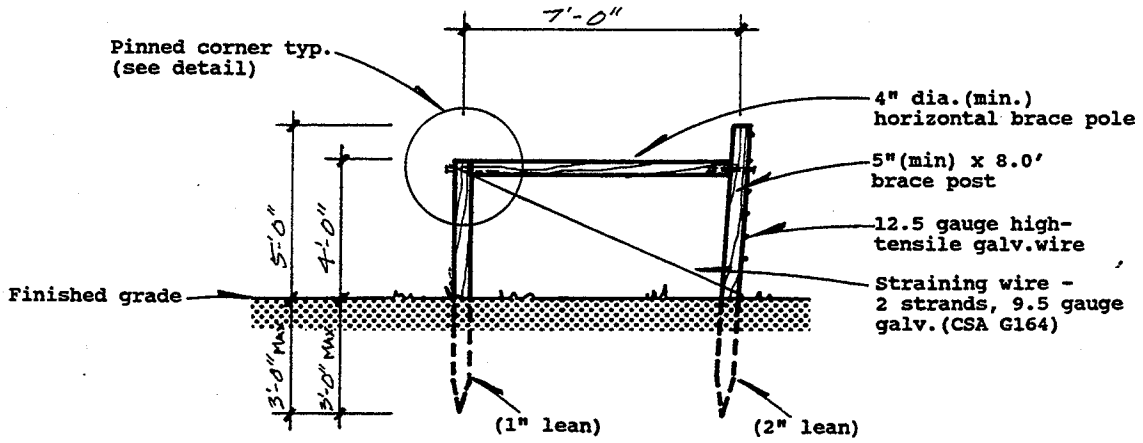


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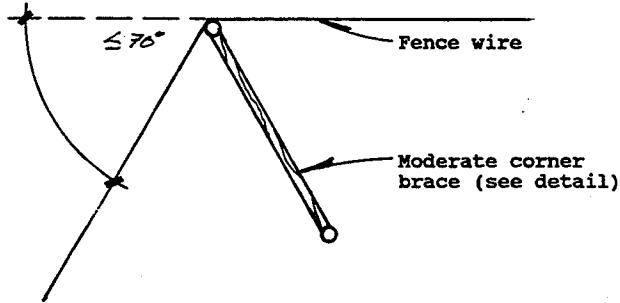
SCHEDULE D: FENCING SPECIFICATIONS

D.7: High-Tensile Smooth Wire Fence

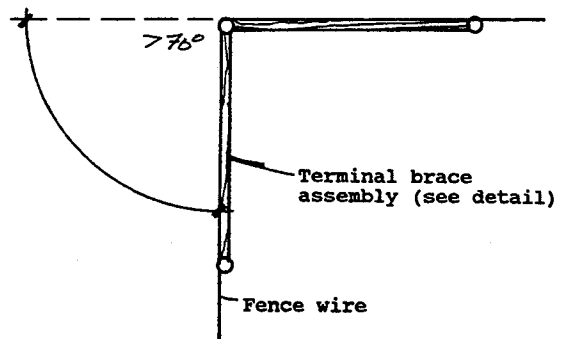
Moderate Corner Brace



Corner Brace (For Alignment Changes up to 70)



Corner Brace (For Alignment Changes over 70)



LANDSCAPED BUFFER SPECIFICATIONS

PART 4: REFERENCES:

1. B.C. Society of Landscape Architects/B.C. Nursery Trades Association - British Columbia Landscape Standard
2. B.C., Province of, Ministry of Agriculture and Fisheries, 1988 - An Introduction to.... High Tensile Smooth Wire Fencing
3. Canada Mortgage and Housing Corp., 1985 - The Interface between Farmland and Housing
4. Canada Dept. of Agriculture, 1968 - Ornamental Shrubs for Canada
5. Grant John A. & C.L.Grant, 1990 - Trees and Shrubs for Coastal British Columbia Gardens
6. Landphair-Klatt, 1979 - Landscape Architecture Construction
7. Matsqui Planning Dept., 1990 - Urban-Rural Fringe Conflict Mitigation Techniques
8. Matsqui Planning Dept., 1990 - Matsqui Tree Guide
9. National Capital Commission, Ottawa - Standard Drawings and Details
10. Richmond Planning Dept., 1986 - Methods for Implementation of the Urban-Rural Interface In Richmond
11. Specimen Trees Ltd., 1991 - Wholesale Catalogue
12. Stevenson/Losee Landscape Architects Ltd., 1992 - PlantLayout/Spacing Information

