DISTRICT OF PORT HARDY

SUBDIVISON AND DEVELOPMENT CONTROL BYLAW 17-99

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2.1 DEFINITIONS

"Accepted" means as accepted by Approving Officer.

"Accessory" means a use, which is subordinate to the principal use on the lot.

"Adjacent" means lots or parcels that are contiguous. For notification requirements and purposes established by this bylaw: two lots or parcels that would be contiguous but for the presence of an intervening Highway or watercourse shall be deemed contiguous.

"Agricultural Use" means a use providing for growing, rearing, producing and harvesting of agricultural products; includes the storage and sale on an individual farm of the products harvested, reared, or produced on that farm and the storage of farm machinery, implements and supplies, and repairs to farm machinery and implements used on that farm; specifically excludes all manufacturing, processing, storage and repairs not specifically included in this definition, livestock and poultry processing, piggery use, feed lots, and mink farms.

"Applicant" means a person applying for the approval of a subdivision or a permit whether as the owner of the property proposed to be subdivided or developed, or as agent for the owner.

"Approval, Final" means the Approving Officer's affixing a signature to the subdivision plan pursuant to s.88 of the Land Title Act.

"Approval, Preliminary Layout Consideration" means written notification of a review of information presented to the Approving Officer previous to submission of a subdivision plan for final approval.

"Approving Officer" means the CAO or any person duly authorised by the Municipal Council to act as Approving Officer pursuant to the provisions of the Land Title Act and Municipal Act.

"Arterial" means a highway so designated by the District of Port Hardy in the District of Port Hardy Official Community Plan.

"Assembly Use" means a use providing for the assembly of persons for religious, charitable, philanthropic, cultural, private educational purposes; includes auditoriums, youth centres, social halls, and churches.

"Bed & Breakfast" means a business operation carried on by a homeowner or agent on a daily basis to provide temporary sleeping accommodation, with or without meal within the same dwelling resided in by the operators, all provided for by prescribed charge on a daily basis. With a maximum number of six guests or occupancy of three bedrooms.

"Boarding or Lodging House" means a building containing rooms for rental as sleeping units, with or without meals being provided for the persons living therein, and containing more than four (4) boarders or lodgers.

"Bond" means an irrevocable Letter of Credit of indefinite term, Cash, or Certified Cheque.

"Boulevard" means that a portion of a highway between the curb lines or the lateral boundary lines of a roadway and the adjoining property or between curbs on median strips or islands, but does not include curbs, sidewalks, ditches or driveways.

"Building" means a structure located on the ground which is designed, erected or intended for the support, enclosure or protection of persons, animals or property. For the purpose of this

Bylaw vehicles shall not be considered to be buildings.

"Building Area" means that part of parcel of land on which can be constructed a building in accordance with this Bylaw, and other relevant Bylaws.

"Building Inspector" means Municipal Inspector of the District of Port Hardy

"Building Bylaw" means District of Port Hardy Bylaw #979, as amended.

"Building Permit" means a permit issued pursuant to the Municipality's Building Bylaw.

"Building Regulations" means regulations regarding the construction of buildings by the current Building Bylaw of the Municipality and as authorised by the Municipal Act.

"Building Width" means the lesser of the two horizontal dimensions of a building or structure and in the case of a mobile home means the width of the mobile home.

"Campground" means a facility approved pursuant to the "Camp-sites Regulations," of the Heath Act, for the temporary accommodation of travellers; specifically excludes a Mobile Home Park.

"CAO" means the Chief Administrative Officer, the Administrative Officer of the municipality or their designate.

"Child Care Facility" means a facility licensed and used as a Child Care Facility pursuant to the Community Care Facility Act.

"Church" means a building wherein persons regularly assemble for religious worship and which is maintained and controlled by a religious body organised to sustain public worship.

"Civic Use" means a use providing for public functions under the auspices of a government body; includes offices, public schools and colleges, public hospitals, community centres, libraries, museums, and courts of law.

"Clerk" means the CAO or the Administrative Officer of the Municipality or their designate.

"Cold Storage Facility" means a facility that can only be used for the storage of fish that have been frozen off the premises or for the freezing of fish that have been transported onto the premises but specifically prohibits the cleaning and processing of fish.

"Collector Highway" means a highway so designated by the District of Port Hardy in the District of Port Hardy Official Community Plan.

"Combined Commercial and Residential Use" means commercial use combined in a building, with the commercial use having a separate outside entrance. Where the use is gasoline service station or motel, the dwelling unit may be in a separate building from the commercial use.

"Combined Industrial and Residential Use" means one industrial use combined in a building with one security suite, with the industrial use having a separate outside entrance. Where the use is gasoline storage or other hazardous use, the dwelling unit may be in a separate building from the commercial use. New developments are required to place a restrict covenant on title in the name of the municipality stating that owners are aware the primary use of subject lands is industrial. Further, I/they recognize that the use of the property for domestic purposes may be unsafe; and that; by choosing to use the residence they accept the nature of an industrial area and its potential attendant 24 hour a day, 365 days a year activity.

"Common Wall" means a wall connecting two structures to make one.

"Community Care Facility" means a facility licensed pursuant to the Community Care Facility Act.

"Community Sewer System" means a sewage collection and disposal system that is owned and operated by a municipality, regional district or an entity designated by one of the above.

"Community Water System" means a system of waterworks owned and operated by a water district, municipality, regional district, improvement district, or an authority designated by one of the above or a water utility as defined in the Water Utility Act.

"Complete" means completion of the Works and Services to the acceptance of the Approving Officer.

"Contractor" means the person or the company undertaking the construction of the Works and Services, in a development, or on municipal property, including their employees, subcontractors and other duly authorised representatives.

"Corner Lot" means a lot or site abutting upon two or more highways at their intersection or upon two parts of the same highway, such highways or parts of the same highway forming an interior angle of less than 135°. For the purposes of this Bylaw the front yard shall parallel the shortest boundary of the lot or site abutting on a highway or right-of-way.

"Council" means the Municipal Council of the District of Port Hardy.

"Cul-de-Sac" means a highway which is designed to be permanently closed by the patterns of subdivision or which is terminated by a natural feature and provides at its termination a vehicular turning area.

"Developer" means the owner of land or the holder of a bona-fide interim agreement or option to purchase land, who has made application to the District of Port Hardy for or is engaged in undertaking the development of such land and shall include his duly authorised representative.

"Developer's Engineer" means the Professional Engineer registered in the Province of British Columbia engaged by the Developer to design and/or prepare drawings for the construction of the Works and Services, or his duly authorised representative.

"Development" means the improvement of land or buildings pursuant to a Building Permit.

"Development Permit Area" means an area so designated in the Official Community Plan which can be developed only in accordance with a development permit issued by Council according to the special conditions and regulations for development of any area within the area.

"Director of Operational Services" means the CAO or designate.

"Dwelling Unit" means one or more habitable rooms, constituting a self-contained unit with one or more separate entrances and containing cooking, eating, living, sleeping and sanitary facilities, and used or intended to be used as the permanent home or residence of one family.

"Excess or Extended Services" means a portion of a highway, water, sewer or drainage system that will provide access to, or will serve, land other than the land being subdivided or developed.

"Exhibition Grounds" means an area used for the display and demonstration of arts, crafts, livestock, or industrial products, and includes an amusement park, recreation area, or horse racing track.

"Exterior Side Lot Line" means the lot line or lines other than the front and rear lot line, common to a lot and a highway.

"Family" means one or more persons related by blood or marriage or up to three unrelated persons jointly occupying a dwelling unit.

"Family Resource Centre" means a centre providing counselling services to the residents of the community, including offices and meeting space.

"Fence" means a railing, paling, trellis, tower or other screening forming a boundary to or enclosing some area.

"Final Approval" means that approval granted by the Approving Officer when all relevant conditions of this Bylaw, the "Municipal Act," the Land Title Act" and other relevant requirements have been fulfilled.

"Fish Packing and Processing" means a facility used for the loading, unloading, packing, processing, refrigeration, or warehousing of fish or fish products.

"Floor Area" means the total area of all the floors measured to the extreme outer limits of the building, including enclosed porches, enclosed verandas, and enclosed balconies, but not including areas used for parking.

"Frontage" means that length of a lot boundary which immediately adjoins a highway other than a lane or walkway.

"Forestry" means any land used for the growing, harvesting, or storage of forest products produced on the same site, and the management, or protection of forest lands, and includes the auction, wholesale or retail of forest products harvested on the same site, or the storage of logging equipment or supplies used on that site, but excludes processing of timber.

"Front Lot Line" means the lot line common to a lot and an abutting highway. Where a lot has lot lines abutting two or more highways the front lot line shall be the shortest of such lines.

"Garage or Carport" means a detached accessory building or a portion of a principal building whose principal or intended use is for the parking or temporary storage of motor vehicles and in which there are no facilities for repairing or servicing such vehicles.

"Gasoline Service Station" means any building or land used or intended to be used for the retail sale of motor fuels and lubricants and may include, as accessory uses, the servicing and minor repair of motor vehicles and the sale of automobile accessories, but shall not include motor vehicle body work, painting or major repairs.

"Grade or Grade Level, Natural" means for the purpose of measuring the height of a building or determining a basement or cellar, the ground level adjacent to the exposed wall of a building, with no adjustment having been made to the existing undisturbed ground level except for a minor slope equalisation as approved by the Building Inspector. The Building Inspector at his discretion may also accept the definition as developed in the building code as amended on a particular instance.

"Height" means the vertical distance from the natural grade at the perimeter of a building or structure to the highest point of the roof surface of a flat roof, and to the mean level between the eaves and the mansard roof, and to the mean level between the eaves and the ridge of a gable, hip, gambrel or other sloping roof, and in the case of a structure without a roof to the highest point of the structure.

"Highway" includes a street, road, lane, bridge, viaduct, and any other way open to public use,

but does not include a private right-of-way or easement on private property.

"Home Craft" means the use of part of a residential building or part of any building accessory to a residential building on lands lawfully zoned for residential use for the purposes of an avocation, recreational and other activities, which may be carried on for the purposes of gain by members of the family residing in the premises, provided that such activities do not create a nuisance for adjacent lands and residences by virtue of; odorous or noxious matters or vapours, smoke, dust, heat, glare, radiation, vibration, electrical interference, noise, illumination or traffic.

"Home Occupation" means any occupation or profession including a homecraft and which is carried on for gain which is incidental and secondary to the use of lands and premises for residential purposes, and that is subject to the general regulations contained in this Bylaw.

"Hospital Hostel" means transient accommodation operated by a non-profit society available only to those persons visiting or accompanying friends or relatives receiving care and treatment at a Hospital.

"Kennel" means any building, structure, compound, group of pens or cages or property in which or where four or more dogs or cats are or are intended to be trained, cared for, bred, boarded, or kept for any purpose whatsoever. A dog or cat means a member of the canine or feline species respectively which is four or more months of age.

"Landscape Architect" means a person who is registered as a member of the British Columbia Society of Landscape Architects under the provisions of the Landscape Architects Act.

"Landscape Designer" means a person whose major professional occupation and training is in landscape design and planting design.

"Landscaping" means the planting of lawns, shrubs and trees, and the addition of fencing, walks, drives, or other structures and materials used in landscape architecture.

"Lane" means a highway more than 3 metres but not greater than 8 metres in width, intended to provide vehicular access to any abutting parcels of land.

"Livestock" means rabbits, goats, sheep, swine, horses, cattle, poultry kept for the purpose of providing meat or eggs, or fur bearing animals as defined in the Fur Farm Act.

"Local Highway or Local" means a highway designed to provide direct access to individual parcels and to provide for circulation of traffic within subdivisions.

"Lot" means an area of land registered as a separate parcel in the Land Titles Office including a bare land strata lot. In the case of strata lots other than a bare land strata lot, the parcel from which the strata plan is derived constitutes the lot.

"Lot Area" means the total horizontal area within the boundaries of a lot.

"Lot Corner" means the lot at the intersection of two or more highways excluding lanes.

"Lot Coverage" means the percentage of the lot area covered by buildings and structures.

"Lot Line" means the legally defined limits of any lot, and in particular:

(a) "Front Lot Line" means the lot line that divides the lot from the highway, provided that in the case of a corner lot the shorter

lot line that abuts the highway shall be deemed to be the front lot line.

(b) "Front Lot Line - Panhandle Lot" means any lot line adjoining and approximately perpendicular to the access strip, but excluding any lot line in the access strip.

(c) "Side Lot Line" means a lot line other than a front or rear lot line.

(d) "Rear Lot Line" means the lot line opposite to and most distant from the front lot line, or where the rear portion of the lot is bounded by intersecting side lot lines, it shall be the point of such intersection.

"Lot Depth" means the shortest horizontal distance between the front and rear lot lines.

"Lot Width" means the distance between side lot lines at the front building setback line, measured at right angles to the lot depth.

"MMCD" means Master Municipal Construction Documents as published by the Master Municipal Construction Documents Association and printed in 1996 as amended.

"Marina" means the use of land or surface of the water for the sale and/or rental of boats, docking berths, marine engines and marine supplies, excluding the loading or unloading of fish or commercial goods.

"Marine Business" means the sale of boats and supplies related to boats and the repair and servicing of boats.

"Medical Heath Officer" means the Medical Health Officer or local designate appointed under the Health Act for the territorial jurisdiction of the area in which a subdivision or development is located.

"Mobile Home" means a single family dwelling unit equipped with a water closet and a bathtub or shower, waste from which shall be disposed of directly into a sewer, and manufactured as a unit or units intended to be occupied on a year-round, long-term basis in a place other than where it was manufactured. It may be designed with detachable towing and touring gear and upon arrival at the site, can be completed and ready for occupancy except for placing on foundations, connections of utilities and some incidental assembly; and must meet the standards specified in the Canadian Standards Association Standard Z-240.2.1 as amended.

"Motel or Auto Court" means a building or buildings, occupied or intended to be occupied solely by transient motorists, each sleeping unit of which has its own sanitary facilities with a water closet, wash basin and bath or shower.

"Municipal Act or MABC" means the Municipal Act of British Columbia or the legislation designated by the Province of British Columbia that establishes, authorises and empowers municipal government.

"Municipal Drainage System" means a system owned, operated and maintained by the Municipality or their designate for the collection, conveyance and disposal of storm water.

"Municipal Engineer" means the CAO or designate.

"Municipal Inspector" means the person duly appointed as such from time to time by the Council and includes any person designated by the CAO to act on his behalf.

"Municipal Sanitary System" means a system owned, operated and maintained by the Municipality or designate for the collection, conveyance, treatment and disposal of sanitary sewage.

"Municipal Water System" means a system of waterworks, within the meaning of the Health Act, which is owned, operated and maintained by the Municipality or designate.

"Municipality" means the District of Port Hardy or the area within the municipal boundaries thereof.

"Natural Boundary" means the visible high water mark of any lake, river, stream, or other body of water where the presence and action of the water are so common and usual, and so long continued as to mark on the soil of the bed of the body of water a character distinct from that of its banks, in vegetation and the nature of the soil.

"Natural Grade" means the average ground level recorded at the outermost corners of a building or proposed building and may be determined by survey and referenced bench mark prior to site preparation.

"Non-conforming Building or Use" means any building or use already existing which does not conform with all the regulations of this Bylaw, or any amendment thereto, for the zoning district in which such building or use is located.

"Official Community Plan" means the official community plan of the Municipality as adopted by Bylaw.

"Owner" means a person, registered in the Land Title Office as owner of land or a charge on land, whether entitled to it in his own right or in a representative capacity or otherwise and includes "registered owner."

"Panhandle Lot" means any lot which is serviced and gains access to a highway by means of a narrow strip of land which is an integral part of the lot (hereinafter called the "access strip").

"Parcel" has the same meaning as in the Municipal Act.

"Parks Manager" means the CAO or designate.

"Potable Water" means water which is approved for drinking purposes by the Medical Health Officer.

"Preliminary Approval" means the conditional approval by the Approving Officer of a proposed subdivision plan, and outlines the requirements which must be fulfilled to obtain Final Approval.

"Principal Building" means a building which contains the chief or main use on a lot.

"Professional Engineer" means a person who is registered or duly licensed as such under the provisions of the Professional Engineers & Geoscientists Act of the Province of British Columbia.

"Proven Supply" means that a minimum of 2000 litres per day of potable water must be proven to be available to the satisfaction of the Chief Administrative Officer or designate.

"Public Utility" means the lawful distribution or distributor of electricity, gas, water, telephonic or television signals under the Utilities Commission Act, the Municipal Act or a Statute of Canada or British Columbia.

"Public Works Superintendent" means the CAO or designate.

"Residential Highway" means a highway within a residential neighbourhood and not intended to carry traffic from one neighbourhood to another.

"Residential Multiple Family" means a building consisting of more than two dwelling units each of which is occupied or intended to be occupied as a permanent home or residence.

"Residential Single Family" means a building consisting of one dwelling unit which is occupied

or intended to be occupied as the permanent home or residence of one family, and containing not more than one (1) set of major cooking appliances.

"Residential Two Family" means a building consisting of two dwelling units each of which is occupied or intended to be occupied as the permanent home or residence of a family.

"Resource Development" means to harvest, explore for, develop, and produce wood products, coal or mineral ore with related plant, equipment, storage, repair and transportation facilities and to develop and produce gravel and related material in conjunction with mining or forestry.

"Retail" means the selling of goods and services directly to the Consumer.

"Roadway" means the portion of the highway that is improved, designed or ordinarily used for vehicular traffic.

"Rural Highway" means a highway serving rural parcels of land not being an arterial highway.

"Screening" means a continuous opaque fence, wall, compact evergreen hedge or combination thereof, supplemented with landscape planting, that would effectively screen the property which it encloses, and is broken only by access drives and walks.

"Secondary Suite" means a separate designated area within a one-family residential dwelling containing toilet, bedroom, sleeping and living areas and kitchen facilities pursuant to the requirements of the BC Building Code.

"Security Deposit" means cash or an irrevocable Letter of Credit with an indefinite term.

"Security Suite" means a single family residential unit of up to 2 bedrooms or 1 den and 1 bedroom. With a maximum size of 111.48 square metres.

"Service Business" means a business providing a service to persons and their pets including barber and beauty shops, tailors, shoe repair, dress makers, photographers, pet grooming, dry cleaning, optical or watch repair, florist, launderette, gift shop, book and stationery, small appliance repairs, and licensed professional practitioners.

"Service Club" means the meeting place of an association of persons as a registered non-profit society for the purposes of providing services and raising funds for community projects.

"Servicing Agreement" means an agreement pursuant to this Bylaw for the installation of services by the Developer.

"Shopping Centre" means a group of retail stores in one or more buildings designed as an integrated unit.

"Shopping Centre, Neighbourhood" means a shopping centre having a gross leasable area of more than 100 m^2, but less than 1,000 m^2.

"Shopping Centre, Community" means a shopping centre having a gross leasable area of more than 1,000 m^2, but less than 6,000 m^2.

"Shopping Centre, Regional" means a shopping centre having a gross leasable area of 6,000 sq.m., or more.

"Sign" means a letter, numeral, work, picture or attention drawing device, excluding traffic control devices, displayed out of doors in such manner to be visible from a highway. For the purpose of this Bylaw:

(a) "Advertising Sign" means a canopy, facia, free standing, soffit, pole or projecting sign advertising a certain product or thing for sale or on display on the property on which the sign is erected or advertising

that a certain business or event is carried on upon the property on which the sign is erected.

(b) "Bed & Breakfast Sign" means a sign stating "_____ Bed and Breakfast" in a window or an illuminated or unilluminated pole sign. The pole sign must be located within two metres of the front lot line or in the case of a corner lot if the sign is placed in the area of the street corner, the sign must come no closer to the intersection than the area bounded by the intersection lot lines at a street corner and a line joining points along said lot line 6 metres from their points of intersection. Each Bed and Breakfast is allowed one (1) sign only.

(c) "Billboard Sign" means a sign constructed by painting or posting a message on a preconstructed frame intended for that purpose.

(d) "Canopy Sign" means a sign that is constructed as an integral part of the oblique or slanting surface of the canopy.

(e) "Community Activity Sign" means a sign giving notice of an activity within the community sponsored by Government or a non-profit organisation.

(f) "Directional Sign" means a sign indicating the name and direction of an establishment or an area.

(g) "Directory Sign" means a sign listing religious, community and service club activities.

(h) "Fascia Sign" means a sign constructed of individual raised letters displayed on the fascia of a building above a soffit or in a plane parallel to a fascia and not more than 0.5 metres from the building, but shall not extend above the roof of the building, or be located below 2.5 metres from grade.

(i) "Free Standing Sign" means a sign not connected in any way to a building.

(j) "Home Identification Sign" means a sign identifying the residence by occupant or number.

(k) "Illuminated Sign" means a sign designated to give forth any artificial light, either directly from a source of light incorporated. in or connected with such signs, or indirectly from an artificial source, so shielded that no direct illumination from it is visible elsewhere than on the sign and in the immediate proximity thereof.

(l) "Logo Sign" means a fascia or surface sign which contains no advertising except the logo or name of the company occupying the building.

(m) "Pole Sign" means any sign wholly or partially supported from the ground by a structure member which is independent of any building or structures on the lot on which the sign is situated.

(n) "Political Sign" means a sign erected to promote the voting at an election in favour of a particular candidate or in support of a particular cause.

(o) "Prohibition Sign" means a sign prohibiting an activity.

(p) "Projecting Sign" means a sign attached to and at right angles to the wall of a building and extending not more than four feet therefrom.

(q) "Public Building Sign" means a sign identifying a public building including a church, library, school or governmental activity.

(r) "Real Estate Sign" means a sign indicating that the property on which it is located is for sale, rent or has been sold or rented.

(s) "Surface Sign" means a sign displayed on the surface of a building less than 2.5 metres from grade or below the eaves or overhang, or in a plane parallel to the building and not more than 0.5 metres from the building.

(t) "Warning Sign" means a sign warning of a danger to persons or property.

(u) "Window Sign" means a sign affixed to the inside of a window in view of the general public.

"Sign Area" means the total area within which the face of a sign could be completely contained. The area of a free standing sign shall be exclusive of any supporting structure but shall include the sum of all faces visible to the public.

"Staff Accommodation" means accommodation for employees of an enterprise on a temporary, seasonal, management or security basis, and shall be considered a form of residential multi-family for the purposes of this Bylaw.

"Storage Yard" means an area outside of an enclosed building where construction materials and equipment, solid fuels, lumber and new building materials, monuments and stone products, public service and utility equipment, or other materials, goods, products, equipment or machinery are stored, baled, placed, piled or handled, whether a principal or an accessory use. A storage yard shall not include an automobile wrecking yard or a junk yard.

"Storage of Vehicles" means the placing of vehicle(s) that meet any three of the following conditions; located outside a principal structure, or obvious signs of rusting, or positioned or fixed on blocks, or dismantled, or under repair, unlicensed.

"Storage of Boats" means the placing on land of a marine vessel(s) that meet any two of the following conditions; not moved or fixed in place for more than 18 months, has a current or expired commercial license, or that is greater than 9.0 metres long.

"Storm Water Management Plan" means a plan indicating the means by which storm water or drainage will be managed within, through and downstream of the development.

"Structure" means anything constructed or erected, the use of which requires location on the ground or attachment to something having location on the ground, but shall not include fences, walkways, paved driveways, and paved parking lots.

"Subdivision" means the division of land into two or more parcels, whether by plan, apt descriptive words, or otherwise, and shall include a plan consolidating two or more parcels into a fewer number of parcels, as well as lot line adjustments.

"Substantial Completion" means completion of works required under this or the Development Services Bylaw except for minor deficiencies.

"Surveyor" means a land surveyor currently licensed and registered in the Province of British Columbia.

"Temporary Construction Camp" means a facility used to accommodate construction workers only during the course of construction of a building to accommodate a principal use on the lot.

"Townhouse" means a block of at least three side-by-side dwelling units accessible from ground level with each dwelling unit having a separate yard space, and each unit separated from each other on at least one side by a common party wall

"Trunk Sewer" means any sanitary sewer of a 300 mm diameter or greater.

"Trunk Storm Sewer" means any storm sewer of a 600 mm diameter or greater.

"Trunk Water Main" means any water supply main of a 300 mm diameter or greater.

"T.V.R." means a device for receiving television signals for domestic purposes.

"Walkway" means a highway intended to carry pedestrian traffic only.

"Water Course" means any natural course or source of water, whether containing water or not, and includes any lake, river, creek, spring, ravine, swamp, gulch, or source of ground water whether or not enclosed or in a conduit.

"Works and Services" means drainage, water and sewer, sidewalks, boulevards, highway lighting and underground wiring or any other works to be required as a condition of subdivision or development of land under this or the Development Services Bylaw.

"Yard Front" means that portion of the lot extending across the full width of the lot from the front lot line to the face of the nearest exterior wall of the principal building on the lot (except in the case of a corner lot, the yard where the principal building faces may be considered front yard for the purposes of fencing).

"Yard Rear" means that portion of the lot extending across the full width of the lot from the rear lot line to the face of the nearest exterior wall of the principal building on the lot.

"Yard Side" means that portion of the lot extending from the front yard to the rear yard and lying between the side lot line and the face of the nearest exterior wall of the principal building on the lot.

"Zone" means a zone created by this Bylaw.

2.0 ADMINISTRATION AND PUBLIC INFORMATION

2.1 APPLICATION

This Bylaw applies to the entire geographical area of the Municipality and to all land, buildings and structures therein as shown on Schedule "A" the Map of the District of Port Hardy which is attached to and forms part of this Bylaw.

This Bylaw shall be deemed to be a Subdivision Bylaw pursuant to Division 26 of the Municipal Act.

2.2 ADMINISTRATION

(1) This Bylaw shall be administered by the Chief Administrative Officer (CAO), his designate, or any other official of the District of Port Hardy who may be appointed by Council.

(2) No person shall prevent or obstruct, or attempt to prevent or obstruct, the entry of any authorised official upon the property as authorised under this Bylaw.

(3) The Building Inspector shall not issue any permit or license for a building, structure or use, which violates any of the provisions of this Bylaw.

(4) The Approving Officer shall maintain a record of all subdivision applications submitted under this bylaw, which shall indicate the final disposition of all such applications thereon.

(5) The design criteria, standards and procedures set out herein do not apply to a strata lot wholly within a building located in industrial, commercial or multiple family residential districts.

(6) The Approving Officer may waive the servicing provisions.

a) For land which is subdivided for the purpose of creating parcels to support the installation of public facilities, utilities, structures and associated equipment.

b) The subdivision proposed a lot line adjustment, and each parcel affected is serviced by an existing water and sewer system and where no future subdivision potential exists.

c) The land is located in a rural area, where no additional land registry parcels are proposed and where the smallest of the proposed new parcels is greater in size than the smaller of the original lots.

2.3 DIRECT ENFORCEMENT

(1) Whenever a person is directed by this Bylaw to carry out a matter or thing, on default by that person, the matter or thing shall be done at the expense of the person in default, and the Municipality may recover the expense, with interest at the rate of six percent (6%) a year; with costs, in the same manner as municipal taxes.

(2) The Municipality shall give 30 days written notice to the owner, by registered mail, (i) of intent to enforce under this section, and (ii) to attend before Council.

2.4 APPLICATION, SUBMISSION AND DUTIES

(1) Application for Preliminary Approval of subdivision shall be submitted to the Approving Officer on the prescribed form. The application form is to be signed by the Owner.

(2) The Owner will be required to pay Administration Fees at different stages of the development process as provided in the Works and Services Bylaw Policy.

(3) Owners are required, as a condition of subdivision approval or building permit issuance, to provide the Works and Services in accordance with the requirements and standards prescribed in this Bylaw, on that portion of a highway immediately adjacent to the site being subdivided or developed, up to the centre line of the highway.

(4) Owners are required, as a condition of building permit issuance, to provide the Works and Services on the site being developed in accordance with the standards prescribed in this Bylaw.

(5) All Works and Services required pursuant to Clause 4.4.3 and 4.4.4 shall be constructed and installed at the expense of the Owner prior to subdivision approval or issuance of a building permit, unless the Owner complies with the requirement of Clause 10.0 and other relevant parts of this Bylaw.

(6) If a subdivision application is not completed and signed by the Approving Officer within twelve months of Preliminary Approval being granted by the Approving Officer, such Preliminary Approval shall be deemed to be void and of no further force and effect and the application for subdivision upon which it is based shall be deemed to have been withdrawn and of no further force and effect.

(7) The Approving Officer shall maintain a record of all subdivision applications submitted under this Bylaw, which shall indicate the final disposition of all such applications thereon.

(8) The design criteria, standards and procedures set out herein do not apply to a strata lot wholly within a building located in an industrial, commercial or multiple family residential district.

(9) The servicing provisions may be waived by the Approving Officer:

1.1 For land which is subdivided for the purpose of creating parcels to support the installation of public facilities, utilities, structures and associated equipment.

1.2 For applications where:

1. The land is located in a rural area, where no additional land registry parcels are proposed and where the smallest of the proposed new parcels is greater in size than the smallest of the original lots.

2. The subdivision proposes a lot line adjustment, and each parcel affected is serviced by an existing water and sewer system and where no future subdivision potential exists.

2.5 FEE

Fees related to the application and inspections are prescribed pursuant to Part 26 of the Municipal Act. The fee charged for copies of the bylaw is prescribed pursuant to Part 5, of the Municipal Act.

(1) Any applicant for subdivision and development or preliminary subdivision layout consideration under this Bylaw shall, at the time of application, pay to the Chief Administrative Officer a fee of:

(a) $25.00 for the first lot to be created by the proposed subdivision.

(b) $10.00 for each additional lot to be created.

(c) For processing and inspection - $150.00.

(d) Examination Fee - $40.00.

(e) mapping $100.00

2.8 SEVERABILTY

If any section, subsection, sentence, clause or phrase of this Bylaw is for any reason held to be invalid by the decision of any court of competent jurisdiction, it shall be severed from this Bylaw without affecting the validity of the remaining portions of this Bylaw.

3.0 COMPLIANCE

3.1 COMPLIANCE

No land, the surface of water, buildings or structures in any zone shall be used by the owner, occupier or other persons for any uses except those specifically permitted in Zoning Bylaw for the zone in which it is located.

3.2 VIOLATIONS

Where a building, part of a building or any use of a building or land contravenes this Bylaw, the Municipal Inspector or his designate may give the owner, agent or person responsible for the violation written notice specifying the violation, ordering that the violation cease and that remedial measures be taken as specified in the notice. Where the notice is given and not complied with, the District of Port Hardy may arrange to remedy the violation and the resulting costs will be recovered by the District by summary process of law in any court of competent jurisdiction. If the payment of the assessed costs are in default a charge will be placed against the lot and these costs when certified by the Treasurer will be entered into the Collector's Roll and collected in the same manner as the taxes shown on the Roll.

3.3 PENALTY

Any person who commits an offence against this Bylaw shall, upon summary conviction, be liable to a minimum penalty of $100.00 and the maximum penalty provided in the Offence Act and, in addition to a maximum penalty of $2000.00 for each day the offence continues, all the costs and any other penalties provided by the Municipal Act and the Offence Act.

Each day that such violation is caused to continue, or allowed to continue, constitutes a separate offence.

4.0 WORKS AND SERVICES STANDARDS

The Works and Services Standards outlined herein define the service requirements for subdivisions.

4.1 TITLE

Refer to Section 1.0 for Title.

4.2 DEFINITIONS

Refer to Section 2.1 for Definitions.

4.3 ADMINISTRATION

Refer to Section 2.2 for Administration.

4.4 APPLICATION FOR PRELIMINARY APPROVAL FOR SUBDIVISION OR DEVELOPMENT

(1) Application for Preliminary Approval of subdivision shall be submitted to the Approval Officer on Schedule "J". The application form is to be signed by the Owner.

(2) The Owner will be required to pay Administration Fees at different stages of the development process as provided in the Works and Services Bylaw Policy.

(3) Owners are required, as a condition of subdivision approval or building permit issuance, to provide the Works and Services in accordance with the requirements and standards prescribed in this Bylaw, on that portion of a highway immediately adjacent to the site being subdivided or developed, up to the centre line of the highway.

(4) Owners are required, as a condition of building permit issuance, to provide the Works and Services on the site being developed in accordance with the standards prescribed in this Bylaw.

(5) All Works and Services required pursuant to Clause 4.4(3) and 4.4(4) shall be constructed and installed at the expense of the Owner prior to subdivision approval or issuance of a building permit, unless the Owner complies with the requirements of Clause 8.10 and other relevant parts of this Bylaw.

(6) If a subdivision application is not completed and signed by the Approving Officer within twelve months of Preliminary Approval being granted by the Approving Officer, such Preliminary Approval shall be deemed to be void and of no further force and effect and the application for subdivision upon which it is based shall be deemed to have been withdrawn and of no further force and effect.

4.5 APPROVALS

(1) Applications for subdivision will be reviewed for compliance with the requirements of this Bylaw and other relevant Municipal and Provincial legislation. Approval of a subdivision plan does not imply that the Municipality will expend municipal funds on works or services in support of the subdivision.

(2) In considering an application for subdivision approval the Approving Officer may refuse to approve the subdivision plan if he considers that the deposit of the plan is against the public interest.

(3) Without affecting the generality of Clause 4.5.2, in considering an application for subdivision approval, the Approving Officer may refuse to approve the subdivision plan if he considers that the subdivision does not conform to:

(a) all applicable provisions of the Municipal Act and the Land Title Act.

(b) the respective municipal bylaws regulating the subdivision of land and zoning.

(4) Where applicable, the Owner shall be required to obtain approval of his subdivision from other agencies having jurisdiction.

(5) The Owner of land being subdivided shall satisfy the requirements of the Approving Officer with respect to the provision of parkland in accordance with the requirements of the Municipal Act.

(6) The Preliminary Approval of any proposed subdivision shall not be construed as Final Approval of subdivision for Land Title purposes. Preliminary Approval may be revoked by the Approving Officer at any time in the event that new information becomes available subsequent to review by the Approving Officer or in the event that any change in legislation, regulations or bylaws which would render the proposed subdivision unlawful takes effect prior to the granting of Final Approval.

4.6 HIGHWAYS

(1) All highways whether required in respect of subdivision or development shall be dedicated and constructed in accordance with the standards contained in the Schedules and Appendices of this Bylaw.

(2) Where the Approving Officer believes that, due to terrain and soil conditions, a roadway of a width of 8 m cannot be adequately supported, protected or drained, he may determine that the owner provide, without compensation, land of a width that, in the Approving Officer's opinion, would permit the highway to be supported, protected or drained.

(3) Where subdivision borders on a natural body of water, access shall be given by highways in accordance with the requirements of the Land Title Act.

4.7 DRAINAGE COLLECTION AND DISPOSAL SYSTEM

(1) The Owner of any lands which are proposed to be developed or subdivided shall provide each parcel of land within the proposed subdivision or development with a drainage collection and disposal system including the standard service connection thereto, constructed in accordance with the standards contained in the Schedules and Appendices hereto, and the said drainage system shall be connected by drainage mains to the existing Municipal Drainage System unless an alternate system is approved by the Approving Officer when it is in the public interest.

(2) Drainage collection systems shall be provided in accordance with the requirements of Appendix "E" of this Bylaw.

4.8 WATER DISTRIBUTION SYSTEM

(1) The Owner of any lands which are proposed to be developed or subdivided shall provide each parcel of land within the proposed subdivision or development with a water distribution system and a fire hydrant system, including the standard service connection thereto, which shall be constructed in accordance with the standards contained in the Schedules and Appendices hereto, and shall be connected to the existing Municipal Water System unless alternate service that is acceptable to the Ministry of Environment or Public Health Unit and expressly authorized by the Approving Officer as being in the public interest is accepted.

(2) Where proposed developments front an existing water main, or where the proposed development constitutes an infill within an existing water service area, connection to the existing water main or extension of water mains will be considered where:

i) domestic flows can be achieved based on current bylaw standard. Where this standard cannot be met, the development is rejected;

ii) fire flows can be achieved;

iii) domestic pressure requirements can be satisfied by on-site booster pumps;

iv) a Restrictive Covenant is registered on lots highlighting the constraints.

4.9 SEWAGE COLLECTION AND DISPOSAL SYSTEM

(1) The Owner of any lands which are proposed to be developed or subdivided shall provide each parcel of land within the proposed subdivision or development with a sanitary sewage collection and disposal system including either;

(2) the standard service connection thereto, constructed in accordance with the Schedules and Appendices of this Bylaw, and the said sewerage system shall be connected by sewer mains to the existing Municipal Sanitary System or,

(3) an alternate servicing system that can be approved by either the Ministry of Environment or the public health agency and which in the opinion of the Approving Officer is in the public interest to accept.

4.10 COMPLETION OF THE WORKS AND SERVICES

(1) All Works and Services required to be constructed and installed at the expense of the Owner shall be constructed and installed to the standards prescribed in this Bylaw before the Approving Officer approves the subdivision or the Building Inspector issues the building permit unless the Owner:

(1.1) Deposits with the Municipality a cash deposit, or an irrevocable letter of credit from a financial institution, acceptable to the Municipality, in the amount of l20% of the estimated construction cost, as estimated by the Chief Administrative Officer or designate, for installing and paying for all Works and Services required under the Bylaw; or at their discretion 120% of the cost of the construction still required, and,

(1.2) Enters into a Servicing Agreement with the Municipality, pursuant to Section GR5, to construct and install the required Works and Services by a specified date or forfeit to the Municipality the amount secured by the Security Deposit.

(2) Where the physical construction of part or all of the Works and Services required under this Bylaw is considered by the Approving Officer to be premature, the requirement

may be fulfilled by the payment of a non-refundable cash deposit equal to 120% of the amount estimated by the Municipality to cover the cost of the required Works and Services. This deposit will be used by the Municipality at a future time when construction of the Works and Services becomes feasible. In addition, the Owner shall pay an administration fee based on the estimated cost as outlined in Policy to this Bylaw. Cash deposits are required to be paid prior to Final Approval.

4.11 SERVICE LEVELS

(1) The Municipality requires different levels of service to be provided in different areas of the Municipality. Each Service Level Area is identified with a number and corresponding pattern. This reference number is shown on Schedule A, Appendix "E" entitled "Service Levels". The level of service required may also be reduced by the Approving Officer when in their opinion, the public interest is best served by not providing works and services on both sides of a public highway.

(2) The minimum level of service for development in each of the Service Level Areas is shown in Schedule A, Appendix "E". The standards and specifications for each service are outlined in Schedule A, Appendices "A" & "B" to this Bylaw.

4.12 OVERSIZING OF WORKS

(1) Where the Municipality requires that an Owner of land being subdivided or developed provide Excess or Extended Services, and the Municipality considers its costs to provide these services to be excessive, the costs shall be paid by the Owner of the land being subdivided or developed.

(2) Where an Owner is required, pursuant to Clause 4.12(1), to pay the costs of Excess or Extended Services, the Municipality may determine and impose a Latecomer Charge and may pay the Owner all of the charges collected, all in accordance with the Municipal Act.

4.13 SUBDIVISION SCHEDULES AND APPENDICES

The following is a list of Schedules and Appendices, which relate to the Works and Services Standards of the Bylaw part of this Bylaw:

SCHEDULE "A" - ENGINEERING DESIGN

(i) Appendix "A" General Requirements

(ii) Appendix "B" Design Criteria

(iii) Appendix "C" Supplementary Detail Drawings

(iv) Appendix "D" Standard Forms

(v) Appendix "E" Service Levels

(vi) Appendix "F" Servicing Agreement

(vii) Appendix "G" Recommended Street Trees

(viii) Appendix "H" Supplementary Specifications

SCHEDULE "B" - MASTER MUNICIPAL CONSTRUCTION DOCUMENTS

4.14 INCORPORATION OF DOCUMENT BY REFERENCE

The Master Municipal Construction Documents published in 1996 by the Master Municipal Construction Documents Association, as amended from time to time, a copy being filed in the Chief Administrative Officer's Office and held in the Municipal Inspector's Office on July 25, 1999, is hereby incorporated by reference into and forms part of this Bylaw.

SCHEDULE "A" - ENGINEERING DESIGN

APPENDIX "A" - GENERAL REQUIREMENTS

GR1 DEFINITIONS

See Section 2.1.

GR2 INTRODUCTION

This Schedule identifies the general requirements in connection with this Bylaw, and shall be read in conjunction with the other Schedules and Appendices in the Bylaw.

In adopting this Schedule, Council, through its Operation Services Department, has reviewed the needs of the Municipality with respect to Engineering Standards, compared the benefits of alternative practices, and identified the most acceptable approaches to provide satisfactory municipal services.

This document is subject to change. To obtain a current copy, additional information, clarification or suggestions for changes and amendments inquiries should be directed to:

Chief Administrative Officer (CAO)
District of Port Hardy
Box 68
Port Hardy, BC
V0M 2P0

The District of Port Hardy assumes and accepts no responsibility for individuals who proceed with works or services described in this bylaw.

GR3 STANDARD OF ENGINEERING WORKS

All engineering works and servicing provisions as required by this Bylaw or as provided for the District of Port Hardy shall be designed, constructed and carried out to the criteria, standards, specifications and requirements stipulated in this Bylaw and its Schedules and the Master Municipal Construction Documents (MMCD) as incorporated by reference into this Bylaw.

Should any conflict exist between these documents, this Bylaw and its Schedules shall take precedence over the Master Municipal Construction Documents.

GR4 RESPONSIBILITY OF ENGINEER AND DEVELOPER

GR4.1 Chief Administrative Officer Status

The CAO or designate shall be the Municipality's representative during the construction period and shall observe the work in progress on behalf of the Municipality.

GR4.2 Consultants and Contractors to be retained by the Municipality

The Municipality will directly retain consultants for the design and construction supervision of new or modifications to existing pump stations, control stations, meter stations and reservoirs and may directly retain consultants for the design and construction supervision of arterial roads and for the Municipality's water and sewer utilities. Similarly, contractors constructing or modifying these facilities will also be retained directly by the Municipality, unless otherwise approved by the CAO or designate. If Developers are financially responsible for the Work, they will post cash prior to the Municipality commencing work.

GR4.3 Work Performance

The whole of the Work, and the manner of performing the same, shall be done to the acceptance of the Director of Operational Service, who shall be the sole judge of the Work and materials in respect to both quantity and quality and his decision with regard to work and materials shall be final and binding.

GR4.4 Variation Of Work At Developer's Request

Any variation to the Work previously proposed, or as previously accepted in design, shall be subject to review by the Chief Administrative Officer or designate. All requests for variation to the Work designed and sealed by a Professional Engineer on behalf of a Developer and accepted by the Municipality shall be made in writing by the Developer's Engineer. Any request for variation from the Developer's Engineer shall include a signed and sealed revision to the previously accepted drawings. The Chief Administrative Officer or designate's decision as to the acceptability of any proposed revision shall be final and binding. Any variation to the approved street tree and boulevard planting plan shall be subject to the review of the CAO or designate.

GR4.5 Unforeseen Conditions

If at any time after the drawings have been accepted for construction, unforeseen conditions or circumstances become known which make it necessary that changes in the design or extra works be done in order to complete the project in an acceptable manner,

the Approving Officer shall have the right to order such changes or extra work as he deems necessary to complete the work in an acceptable manner. All costs of such extra work shall be borne by the Developer.

GR4.6 Verbal Agreements

No verbal instruction, objection, claim or notice by any party to the other shall change or modify any of the terms or obligations contained in any of the specifications and none of the Specifications shall be held to be waived or modified by reason of any act whatsoever, other than by an agreed waiver or modification thereof in writing.

GR4.7 Service of Notices

Any notice, order, direction, request or other communication given by the Municipality to the Developer shall be deemed to be well and sufficiently given to the Developer if the same be left at any office used by the Developer or be delivered to any of his officers, clerks, or servants, including the Developer's Engineer, or be mailed in any Post Office addressed to the Developer's last known place of business.

GR5 CONDUCT OF WORK

GR5.1 Responsibility

The Developer shall be held fully responsible to the Municipality for the acts and omissions of his agents and of persons directly or indirectly employed by him. The Developer agrees to bind all agents or employees to the specifications and drawings applicable to his work.

No work may start on municipal roads or rights-of-way without written permission from the Chief Administrative Officer or designate in the form of a permit as outlined in Form F-1 in Appendix D.

The Developer, the Developer's Engineer and the Contractor must attend a preconstruction meeting with the Chief Administrative Officer or designate prior to the start of construction of the required Works and Services.

GR5.2 Materials and Workmanship

The whole of the Work shall be performed in a workman-like manner with materials and workmanship of the best quality and description. Unless otherwise specified, all materials shall be new.

GR5.3 Survey Monuments, Legal Postings and Benchmarks

All legal posts, stakes, survey monuments and Benchmarks within the area of the Work, and all construction stakes and marks on adjoining works, shall be preserved undisturbed and visible. In the event that any of the above are disturbed, lost or destroyed, they shall be replaced to the acceptance of the Chief Administrative Officer or designate. The Surveyor shall inspect site to determine that all survey posts and pins are present after construction and shall certify to the Chief Administrative Officer or designate that posts and pins are present.

The Developer shall, at his cost, establish a Benchmark system from an existing Benchmark to the development site and internal to the development site. The Benchmark system at a density to be determined by Chief Administrative Officer or designate shall be closed. The Benchmark information shall be provided to the Chief Administrative Officer or designate.

GR5.4 Work of Others

The Chief Administrative Officer or designate shall be at liberty to enter upon the site of the work with his workmen and materials to do other work, and the Developer shall afford any such workmen all reasonable facilities to the acceptance of the Chief Administrative Officer or designate.

The Developer shall arrange his work and dispose of his materials in such a manner as will not interfere with the work or storage of materials of others upon the site of the Work. The Developer shall join his work to that of others and perform his work in proper sequence in relation to that of others to the acceptance of the Chief Administrative Officer or designate.

GR5.5 Existing Structures and Utilities

Any plans or descriptions, verbal or otherwise, of existing utilities and structures that are given to the Developer are intended only as an aid in the location of these items. Measurements and locations of the existing underground utilities and structures shown on the drawings are compiled from the most reliable information available, and must be verified by the Developer prior to proceeding with construction. The Municipality accepts no responsibility for the accuracy of their locations.

GR5.6 Drainage

All portions of the site shall be kept properly and efficiently drained during construction and until final acceptance by the Chief Administrative Officer or designate. The Developer shall be held responsible for all damage which may be caused or result from water backing up or flowing over, through, from or along any part of the Work, or which any of his operations may cause to flow elsewhere.

Existing culverts, drains and ditches affected by the Work shall be kept clear of excavated material at all times during construction. When it is necessary to temporarily remove an existing drainage structure, suitable temporary ditches or other accepted means of handling the drainage shall be provided.

Culverts and drain pipes shall be replaced at the time of trench backfilling and shall be adequately supported such that trench settlement does not disrupt the flow of water. Culverts, drains, and ditches shall be replaced in a condition which is at least equal to that which existed before construction commenced and ditches shall be reinstated so as to prevent any erosion or seepage.

At all times during the course of construction and to the end of the Maintenance Period, there shall be no discharge of any silt, dirt or debris into any existing drainage facility or watercourse. Streets, catch basins, manhole sumps and siltation controls shall be cleaned and maintained as often as the Chief Administrative Officer or designate deems necessary. Any clean-up costs are to the account of the Developer.

GR5.7 Disposal of Excavated Material on Private Property

Material from excavations shall not be placed on private property within the Forest Reserve unless the property owner has obtained a permit issued by the Municipality as required under the Soil Conservation Act. Approval must be obtained from Building Inspector.

For placement of excavated materials on properties outside of the Forest Reserve, approval shall be obtained from the Chief Administrative Officer or designate for placement of excavated material within the corporate limits of the District. Approval must be obtained from Building Inspector.

GR5.8 Work to Fit With Others

All cutting, fitting or patching of the Work shall be done to properly fit or receive existing structures and utilities. Existing works shall not be endangered by cutting, digging or any other operation and the work of others shall not be disturbed or altered except with the written consent of the Chief Administrative Officer or designate.

GR5.9 Damage to Work

The Developer shall be responsible for all loss or damage which may occur on the Work until the same has been delivered to and accepted by the Chief Administrative Officer or designate as specified and if any loss or damage occurs before such acceptance by the Chief Administrative Officer or designate, the Developer shall immediately, at his own expense, repair, restore or re-execute any work which may have been damaged or destroyed.

All repair, restoration or re-execution of the work which may have been damaged or destroyed shall be carried out and completed to the acceptance of the Chief Administrative Officer or designate and at no cost to the Municipality.

GR5.10 Use of Completed Portions

The Municipality shall have the right to take possession of and use any completed or partially completed portion of the work, but such possession and use shall not be deemed an acceptance of such work. If such prior use increases the cost of uncompleted work or causes refinishing of completed work beyond normal wear and tear, the Developer shall be entitled to such compensation as the Chief Administrative Officer or designate may determine.

GR5.11 Municipality's Right to Repair, Restore or Re-execute the Work

Should the Developer fail to perform the Work to the acceptance of the Chief Administrative Officer or designate by failing to begin work or to repair, restore, re-execute or in any manner fails to comply with the specified standards as it applies to any part of the Work as requested by the Approving Officer within a period of 7 days from sending of such notice in writing to do so, the Municipality shall become empowered to do the Work itself or to employ such person or persons to repair, restore or re-execute the works provided that the entire expense of repair, restoration or re-execution shall be charged to the Developer. In an emergency, the Municipality may immediately commence with the repair and restoration work.

The repair, restoration or re-execution shall in no way affect the Developer's duties and liabilities nor in any way relieve him from the performance and fulfilment of any or all of his obligations and duties described in Schedules "A" & "B". All such repair, restoration or re-execution of the Work shall be carried out and completed to the acceptance of the Chief Administrative Officer or designate. The fact of the Municipality not having disapproved of or rejected any part of the Work or any of the materials supplied in connection at the time of the Chief Administrative Officer or designate making an estimate or at any other time during the execution of the Work shall not be deemed or be construed to be an acceptance of any such part of the Work or any such materials.

The provisions of this Section shall remain in full force and effect and be applicable for the period of the execution of the Work and for the Maintenance Period.

GR5.12 Payment of Accounts by Developer

The Developer shall pay all accounts for labour, services and materials incurred by the Municipality as a result of executing any Sections of this Schedule during the execution of the Work, as and when they become due and payable. Should payment of such accounts not be made when they become due, the Municipality will deduct the payment from the security deposit. In

the event that the amount is greater than that owing to the Developer, the Municipality will charge the Developer the difference.

GR5.13 Employee and Plant Safety, Adequacy

The Developer shall at all times be responsible for the safety of their employees and for the safety, adequacy, efficiency and sufficiency of their plant, equipment and method of executing the Work.

The Developer shall be responsible for full compliance with the Workers' Compensation Board's Industrial Health and Safety Regulations. This includes the proper training and supervision of employees. The Developer shall be responsible for notification of the proposed Work to the Workers' Compensation Board. A copy of the notification letter is to be forwarded to the CAO or designate.

GR5.14 Public Convenience, Access, Clean-up

In carrying out the Work, the convenience of the public must always be considered and provided. Streets, thoroughfares or sidewalks shall not be obstructed longer or to any greater extent than is absolutely necessary in the CAO or designate' opinion. In no case shall any street, roadway or place be obstructed longer or to a greater extent than is ordered or approved by the CAO or designate in writing.

Safe access to driveways, buildings and property, both for vehicles and pedestrians, shall be provided at all times. Suitable and convenient platforms, approaches, structures, bridges, crossings or other works shall be constructed and maintained in good order and in a serviceable condition as required by the Chief Administrative Officer or designate.

No material shall be deposited upon any street, sidewalk, boulevard, grass plot, or other public property without due consultation with the Chief Administrative Officer or designate, so that the least damage will be incurred. Material shall not be allowed to remain thereon longer than necessary.

During all phases of the work precautions shall be taken to abate nuisance caused by mud or dust by clean-up, sweeping, sprinkling with water, or other means as necessary to accomplish results acceptable to the Chief Administrative Officer or designate.

GR5.15 Traffic Control, Barriers, Lights

The Developer must, at his own expense, provide, erect, and maintain all required barriers, fences or other proper protection, and must provide, keep and maintain operating lights with amber globes or provide watchmen as may be necessary, in order to insure safety to the public as well as to those engaged about the premises or works, and must (where it is practicable, in the

Chief Administrative Officer or designate's opinion) keep any roadway open for travel for the use of the public for such width as the Chief Administrative Officer or designate may direct. The Developer must also provide a sufficient number of "NO THOROUGHFARE," "DETOUR," or other signs or notices, as determined by the Chief Administrative Officer or designate, which he must cause to be placed at distance from the obstruction to serve sufficient warning to the travelling public and maintain such signs in good order in conspicuous places wherever any roadway, sidewalk or thoroughfare is torn up or dangerous, and so long as it remains unsafe or unfinished. All vehicular or pedestrian traffic warning, control or barrier devices shall be provided in accordance with the Traffic Control Manual for Work on Roadways as published by the BC Ministry of Transportation and Highways and shall be subject to the acceptance of, or conditions of, the Chief Administrative Officer or designate. Works shall be completed in compliance with District of Port Hardy Traffic Bylaw No. 951.

GR5.16 Disposal of Debris by Open Burning

Debris from construction and site clearance works or material brought to the site shall not be disposed of by open burning unless the Developer obtains a Burning Permit from the Municipality pursuant to the Port Hardy Burning Bylaw No. 930 and its subsequent amendments.

GR5.17 Easement Releases

On completion of the Work on private or Municipal property or Municipal rights-of-way, the Developer shall obtain from each property owner affected, a formal release in writing and over the Owner's signature, verifying that the clean-up has been performed and completed to the Owner's acceptance and that the Owner has no further claim upon the Developer or the Municipality as a result of such work. A Form of Release shall be required by the Chief Administrative Officer or designate. All such releases shall be turned over by the Developer to the Chief Administrative Officer or designate and shall be retained by the Chief Administrative Officer or designate as a part of the Municipality's records.

GR5.18 Maintenance Period for Works and Services Except Street Tree and Boulevard Plantings

The Maintenance Period shall be the one year period from the date shown on the Engineers Certificate of Substantial Completion (Form F-3) and upon issuance of the Certificate of Acceptance (Form F-4), should all deficiencies not be complete at the end of the maintenance period.

The Developer shall guarantee the stability and sufficiency of the materials and workmanship supplied and the whole of the Work performed and shall be responsible for and shall make good all defects, imperfections, vandalism acts and settlements which become apparent during the Maintenance Period.

The Developer shall ensure that the roads and sidewalks are kept clean and free of dirt and debris during the Maintenance Period.

Should the Developer fail to make good any defects, imperfections, vandalism acts, settlements or clean-up after being given at least 7 days notice in writing during the Maintenance Period, the Municipality shall be entitled to make alternative arrangements for the execution of the repairs and to recover the costs from the Developer.

GR5.19 Maintenance Period for Street Tree and Boulevard Plantings

Upon completion of the plantings, the Developer shall notify the CAO or designate who shall issue the Planting Completion Certificate upon satisfactory inspection of the Work to determine conformance to the approved drawings and specifications.

The Maintenance Period shall be the one year period from the date shown on the Planting Completion Certificate (Form F-13) and upon issuance of the Planting Acceptance Certificate (Form F-14) should all maintenance requirements and plant replacements not be complete at the end of the maintenance period.

During the Maintenance Period, the Developer shall replace any plant material that dies, is damaged or that fails to grow satisfactorily as determined by the CAO or designate. All replacements shall be with plant material of the same kind and size as the original plantings.

The warranty on replacement plant material shall extend for a period equal to the original warranty period.

Should the Developer fail to make good any defects, imperfections, vandalism acts, settlements or clean-up after being given at least 7 days notice in writing during the maintenance period, the Municipality shall be entitled to make alternative arrangements for the execution of the repairs and to recover the costs from the Developer.

The CAO or designate reserves the right to extend the Developer's warranty responsibilities for an additional year if, at the end of the initial warranty period, leaf development, growth or overall vigour is not sufficient to ensure future survival.

GR6 AGREEMENTS, BONDING, INSURANCE, PERMITS

GR6.1 Servicing Agreement

Prior to commencement of construction, a Servicing Agreement may be required. The purpose of the Servicing Agreement is to protect the Municipality against claims (including liability) for matters arising from the construction, installation, and inspection of the Work. It also allows for provisions which enable the Approving Officer to consider signing of the Subdivision Plans

prior to the start and/or completion of the Work. The Servicing Agreement makes provision for the Security Deposit, Indemnity Clause, Insurance Requirements, Maintenance Periods, and Administration Fees. The standard Servicing Agreement is contained in Appendix "F" to this Schedule.

The following shall be submitted by the Developer in the preparation of a valid Servicing Agreement:

a) Two copies of the Servicing Agreement will be prepared by the Development Engineering Department. The Agreements must be signed and sealed and returned to the Development Engineering Department.

b) Security Deposits (which may be cash or a Letter of Credit with an indefinite term) in the amount and form specified by the Development Engineering Department. This deposit will be based on the estimated construction cost for the works to be constructed. Letters of Credit must note the Municipal Project number to which they apply.

c) A Certificate of Insurance (Form F-11) in accordance with the requirements of the Servicing Agreement.

d) Four complete sets of accepted design drawings.

e) A non-refundable Administration Fee based upon the estimated cost of construction.

GR6.2 Security Deposit

The Municipality will require a security deposit from the Developer, acceptable to the Chief Administrative Officer or designate, to ensure the construction, installation and maintenance of the Work as identified in the Servicing Agreement.

GR6.3 Indemnity Clause

As stipulated in the Servicing Agreement the Developer covenants to save harmless and effectually indemnify the Municipality against:

a) All actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever, brought by reason of the performance of the Work.

b) All expenses and costs which may be incurred by reason of the execution of the Work resulting in damage to any property owned in whole or in part by the Municipality or which the Municipality by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, repair or maintain.

c) All expenses and costs which may be incurred by reason of liens for non-payment of labour or materials, Workers' Compensation assessments, Employment Insurance, Federal or Provincial Tax, and for encroachments owing to mistakes in survey.

d) All actions and proceedings, costs, damages, expenses, claims and demands arising from the Developer's trespass or damage to private property or properties owned by persons other than the Municipality.

If any monies are paid by the Municipality because of failure of the Developer to execute this clause, then all such monies, and reasonable expenses attached, shall be chargeable to the Developer.

GR6.4 Public Liability and Property Damage

Prior to the commencement of any work, the Developer shall obtain and maintain in force during the term of the Servicing Agreement and the Maintenance Period, a policy of insurance acceptable to the Municipality with limits not less than those shown in the following items:

a) Comprehensive Public Liability Insurance and Property Damage Insurance providing coverage of at least $3,000,000 inclusive against liability for bodily injury or death and/or damage to property on an all risk occurrence basis.

b) Motor Vehicle Insurance for public liability and property damage providing coverage of at least $3,000,000 inclusive on owned, non-owned or hired vehicles.

c) Completed operations coverage on all-risk occurrence basis of at least $3,000,000 inclusive against liability for bodily injury, death and/or damage to property of others arising out of the existence of any condition in the Work when completed or any installation or repair operations during the Maintenance Period.

In all policies of insurance providing coverage called for by this clause (except motor vehicle insurance), the Municipality shall be named as an additional insured, and all such insurance shall contain a provision that the insurance shall apply as though a separate policy has been issued to each named insured. In all such policies, each contractor engaged in the Work shall be named as an additional insured in respect of the performance of the Work, and each such policy shall provide that no expiry, cancellation or material change in the policy shall become effective until after thirty days notice of such cancellation or change shall have been given to the Municipality by registered mail. The Developer shall maintain the insurance policy until the end of the Maintenance Period.

As a condition precedent to the issuing of Permission to Construct (Form F-1), the Developer shall be required to deliver to the Municipality an Insurance Certificate (Form F-11) signed by a licensed insurance agent.

The Developer shall submit the certification along with a copy of the insurance policy.

GR6.5 Patents and Copyrights

The Developer shall pay all royalties, patent and license fees and hold and save the Municipality, its officers, agents, servants and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, articles, or appliances manufactured or used in the execution of the work, including their use by the Municipality, and if the Developer shall fail to save the Municipality, its officers, agents, servants and employees in manner aforesaid any monies collected from the Municipality, its officers, agents, servants and employees by reason of such failure shall be recoverable from the Developer.

GR6.6 Permits

Work undertaken on a Highway or on a gazetted or otherwise dedicated Highway right of way or all full or partial road closures require approval of the Chief Administrative Officer or designate by way of a Highway Use Permit issued under the Highway and Traffic Bylaw.

GR7 MONITORING AND SECURITY DEPOSIT EXCEPT STREET TREE AND BOULEVARD PLANTINGS

GR7.1 Monitoring of the Work During Construction

The Chief Administrative Officer or designate may monitor any part of the Work and any other places where material for the work is being prepared or stored as and when he deems it necessary, and the Developer shall afford him every necessary facility and access. Where monitoring by the Chief Administrative Officer or designate discovers deficiencies, the Chief Administrative Officer or designate may undertake further monitoring and inspection to review the works.

The Developer shall supply representative samples of materials as and when requested by the Chief Administrative Officer or designate. Furthermore, the Developer shall provide any available competent labour required by the Chief Administrative Officer or designate on site in connection with survey, measurements, inspections, and testing of the Work. No payment shall be made for the cost to the Developer of any labour, material, work or delay occasioned by this requirement.

The Developer shall at the request of the Chief Administrative Officer or designate and within such time as the Chief Administrative Officer or designate shall designate, open for inspection

any part of the Work that has been covered up. If the work thus uncovered is found to be to the acceptance of the Chief Administrative Officer or designate, the expense of the opening up shall be paid by the Municipality.

Monitoring of construction of the works by the Chief Administrative Officer or designate is limited to ensuring that the Work is in general compliance with the standards stipulated in this Bylaw and that the finished product will be in general conformity with the intent of the accepted plans and in a condition acceptable to the Municipality. Monitoring does not constitute day to day inspection, supervision or co-ordination of the Work, and neither is monitoring intended to serve in place of proper engineering inspection of the Work by the Developer's Engineer.

The Developer's Engineer shall undertake regular inspection and supervision of the works to ensure the work is being performed in compliance with approved design drawings and the requirements of the Bylaw. Inspection reports shall be submitted weekly to the Municipal Development Engineering Inspector.

The Developer's Engineer shall provide such professional service as required by the Engineers and Geoscientists Act, Code of Ethics Section 14(a).

The Developer is responsible for making arrangements to ensure proper engineering inspection, supervision and co-ordination of the Work and for ensuring that all requirements of the Municipality are met and completed within the stipulated time limits.

On Substantial Completion of the construction and prior to the issuance of the Certificate of Substantial Completion (F-3), the Developer's Engineer shall provide a certification that all construction has been completed in compliance with approved design drawings and in compliance with the Bylaw by submitting the Inspection Certificate (F-2). Within 60 days of the date of the issuance of the Certificate of Substantial Completion (F-3), the Developer's Engineer shall submit the Certified Record Drawings.

GR7.2 Security Deposit Reductions

As work progresses, there shall be no interim reduction in the amount of the Letter of Credit. Upon issuance of the Certificate of Substantial Completion (F-3), the District may release up to 85% of the Letter of Credit with a minimum of $2,500.00 to be retained and a maximum of $30,000.00, which shall be retained until the Certificate of Acceptance (F-4) is issued after completion of the Maintenance Period.

GR7.3 Certificate of Substantial Completion

On the completion of the Work the Developer shall notify the Chief Administrative Officer or designate. The Chief Administrative Officer or designate shall, on receipt of notice, inspect the Work and, if necessary, issue a list of deficiencies that must be corrected. Upon correction of the deficiencies, to the acceptance of the Chief Administrative Officer or designate, a Certificate of

Substantial Completion shall be dated and issued where upon all the monies held by the Municipality shall be released, less 20% of the cost of the total works plus the value of any deficiencies. Form F-3 forming part of Appendix "D" to this Schedule applies.

GR7.4 Record Drawing Release

Within 60 days of the issuance of the Certification of Substantial Completion, the Developer shall deliver to the Chief Administrative Officer or designate:

a) service record cards showing the location of water, storm, and sanitary services for each lot,

b) record drawings consisting of 2 sets of signed and sealed paper prints, 1 set of mylars, and 1 set of drawing files in DXF format if the drawings were prepared using a CAD system,

c) Inspection Certificate (Form F-2).

On acceptance of the service record cards, record drawings and Form F-2, the Municipality will release all security withheld less a Maintenance Holdback of 15% of the total secured cost of the Work to a minimum of $2,500 and a maximum of $30,000 to insure payment of any maintenance or repair. The value of any deficiencies will be held in addition to the above amounts.

GR7.5 Maintenance Holdback Release

The Approving Officer will release the Maintenance Holdback, less the cost of any repairs chargeable to the Developer, upon expiry of the Maintenance Period, and upon issuance of the Certificate of Acceptance (Form F-4) should all deficiencies not be completed at the end of the maintenance period, when so requested in writing by the Developer.

The Maintenance Holdback does not apply to BC Hydro or BC Telephone approved installations.

GR7.6 BC Hydro and BC Telephone Bonding (Civil Works)

Security held by the Municipality specifically marked to bond for BC Hydro and BC Telephone civil works installations will be released only upon written confirmation from BC Hydro and BC Telephone companies stating that those works are complete and constructed to the specifications of those companies.

GR7.7 Testing or Confirmation of Works Completed

The Municipality reserves the right to conduct independent testing of any works constructed or being constructed. Generally, these tests will be conducted on a random basis and are for the expressed purpose of ensuring that the Work being accepted by the Municipality meets the minimum acceptable standards.

In addition, to ensure the Municipality has proper and accurate records of the works constructed, survey spot-checks may be conducted from time to time to verify the authenticity of the as-built information.

The costs for testing or surveying shall be borne by the Developer.

GR7.8 Issuance of Building Permits

In new subdivisions where municipal services are being installed, all essential services (water, storm and sanitary systems, lot grading, road base, first lift of asphalt and curbs) shall be in place and accepted by the Chief Administrative Officer or designate prior to the issuance of Building Permits.

GR8 INSPECTION AND SECURITY DEPOSIT FOR STREET TREE AND BOULEVARD PLANTINGS

GR8.1 Inspection of the Work

The CAO or designate may inspect any part of the Work and any other places where material for the Work is being prepared or stored as and when he deems it necessary, and the Developer shall afford him every necessary facility and access.

The Developer shall also supply representative samples of materials as and when requested by the CAO or designate. Furthermore, the Developer shall provide any available competent labour required by the CAO or designate on site in connection with survey, measurements, inspections, and testing of the works. No payment shall be made for the cost to the Developer of any labour, material, work or delay occasioned by this requirement.

The Developer shall at the request of the CAO or designate and within such time as the CAO or designate shall designate, open for inspection any part of the Work that has been covered up. If the Work thus uncovered is found to be to the acceptance of the CAO or designate, the expense of the opening up shall be paid by the Municipality.

Inspections by the CAO or designate are limited to ensuring that the Work is in compliance with the standards stipulated in Schedules “A” & “B” and that the finished product will be in general conformity with the intent of the accepted plans and in a condition acceptable to the Municipality. They do not constitute supervision or co-ordination of the Work, and neither are they intended to serve in place of proper supervision of the Work.

The Developer is responsible for making arrangements to ensure proper supervision and co-ordination of the Work and for ensuring that all requirements of the Municipality are carried to a satisfactory conclusion within the stipulated time limits.

GR8.2 Planting Completion Certificate

Upon completion of street tree and boulevard plantings, the Developer shall notify the CAO or designate who shall inspect the Work and, if necessary, issue a list of deficiencies that must be corrected. Upon correction of the deficiencies, to the acceptance of the CAO or designate, a Planting Completion Certificate shall be dated and issued. Upon issuance of the Planting Completion Certificate by the CAO or designate, the Municipality will release the security held for the Street Tree and Boulevard Plantings, less a maintenance holdback of 20%. Form F-13 forming part of Appendix "D" to Schedule "A" applies.

GR8.3 Maintenance Holdback

The maintenance holdback of 20% shall be held for the one year period next ensuing from the date shown on the Planting Completion Certificate. The maintenance holdback shall be released after the expiration of the one year Maintenance Period and upon issuance of the Planting Acceptance Certificate (Form F-14) should all maintenance requirements and plant replacements and plant replacements not be complete at the end of the maintenance period.

Replacement plant material shall be warranted for a period equal to the original warranty period.

GR9 ENGINEER'S UNDERTAKING

The Developer's Engineer shall provide a letter of undertaking as per Standard Form F-15 in Appendix "D," confirming their responsibilities during and after construction. This undertaking shall be submitted to the Municipality prior to the pre-construction meeting.

GR10 INTERPRETATION

Where strict compliance with these specifications is impractical or unreasonable, the Chief Administrative Officer or designate may permit a minor variance to the specifications. A record of these changes shall be sent to the Chief Administrative Officer or designate. Any changes must be approved in writing by the Chief Administrative Officer or designate.

GR11 WAIVER

Where because of the size, location or service requirements of any subdivision the services of a professional engineer is not required in the opinion of the Chief Administrative Officer or designate the provision set out above dealing with the engineering drawings, (construction and inspection of works not applicable) may be waived by the Chief Administrative Officer or designate.

APPENDIX "B" - DESIGN CRITERIA

SECTION G - GENERAL

G1 INTRODUCTION

The purpose of this section is to outline the minimum standards and requirements the Municipality will accept in the design and record drawing submissions for engineering works.

Quality submissions of design and record drawings are expected. Whenever engineering works are required or proposed, the Developer's Engineer shall arrange a pre-design meeting to ensure compliance with the latest municipal standards, specifications and policies.

Incomplete or substandard submissions will be returned to the Developer's Engineer without comment on the drawings and with a short letter of explanation as to why the drawings are being returned. A subsequent re-submission which remains incomplete or substandard will result in a request to meet with the Developer's Engineer, the Developer and the Chief Administrative Officer or designate.

Where a question arises, please contact the Development Engineering Department for clarification.

All submissions shall comply with all applicable requirements of the District of Port Hardy Bylaws and their applicable Schedules and Appendices:

G2 SURVEY INFORMATION

All surveys shall be conducted in a safe manner so as not to create a nuisance to traffic or the public at large. The permission of the registered owners is required before entering private property.

All elevations shall be from the Geodetic Datum. Information regarding the location and elevation of benchmarks or monuments may be obtained from the District of Port Hardy or Ministry of Transportation and Highways.

Originating benchmarks and survey monuments in the immediate area shall be noted on all plans as well as those to be established in the Work.

Copies of legible field notes shall be made available to the Municipality upon request.

Centre lines (or offset lines) are to be marked and referenced in the field and all chainage shall be keyed to the legal posting.

All existing items such as monuments, manholes, catchbasins, fire hydrants, poles, existing dwellings, fences, trees, hedges and unusual ground shall be noted as required.

Where applicable, cross-sections will be required. The sections shall include centre line, edge of pavement or gutter line, edge of shoulder, ditch invert, top of ditch, property line, and an existing ground elevation inside property line.

In urban areas the chainage shall be as given by the Operational Services Department or if acceptable, as established by previous engineering designs. Generally, chainage shall increase from left to right and from bottom to top on a drawing. North shall be at the top or right side of a drawing.

G3 DRAWING SUBMISSION

All drawings shall be prepared in accordance with the following requirements and all other applicable requirements of this Schedule.

All drawings, except for the street tree and boulevard planting plan, shall be signed and sealed by a Professional Engineer registered in British Columbia.

The street tree and boulevard planting plan shall be signed and sealed by a Landscape Architect registered in British Columbia or a Landscape Designer.

All drawings shall be stencilled and shall clearly identify the works in sufficient detail. Road cross-sections may be by hand, provided they are of good quality and clarity.

All new works are to be drafted in bold lines.

Notes pertaining to the construction of a service are to be shown on that service drawing.

Survey baseline is to be referenced to legal lot lines and illustrated on each sheet. Chainages are to be shown on profile in even 20 m intervals.

Offsets are to be shown to both sides of the road allowance or to one side with the road allowance width annotated.

Plans shall show the legal layout of roads and properties, with all legal descriptions (lots and plan numbers) and dimensions (to the nearest 0.01 m). Existing house numbers and all registered statutory rights-of-way shall also be shown.

A complete set of engineering design drawings shall include, in the following sequence:

G3.1 Cover Sheet

Noting the Developer's Engineer's name, the Developer's name, address, telephone number and fax number, the Municipal File Number, the legal description of the lands involved, a site plan at a 1:5000 scale, and an index.

The site plan shall note all proposed roads and the proposed subdivision layout. The cover sheet may be utilised to show the drainage catchment area.

G3.2 Key Plan

The Key Plan shall be at a 1:500 scale and shall note all proposed services, including street lighting and all non-standard connection offsets. If more than one sheet is required, note the westerly or southerly portion first and identify as Key Plan "A" with additional plans noting "B" and "C," etc. The development site is to be outlined with a bold line.

If a profile drawing is not required for a utility, then the service connection depths and inverts are to be noted on the Key Plan.

G3.3 Storm Water Management Plan

Shall be at 1:500 scale and identified as per key plan system if more than one sheet is required. The Storm Water Management Plan shall include:

a) the pre-development contour lines at maximum 1 m intervals. This topography shall extend a minimum 30 m outside the development site;

b) all existing lot corner elevations (uncircled);

c) all proposed lot corner elevations (circled);

d) the proposed building envelope with the Minimum Building Elevation (MBE). All MBE's are to be set above the hydraulic grade line of the 1:100 year storm;

e) the slope of the lot (directional arrow), noting lot dimensions;

f) the minor (1:5, year) storm sewer system with the flows noted per sub-catchment area and the accumulated flows from all upstream sub-catchment areas. Provision must be made for upstream development potential where applicable;

g) the major (1:100 year) storm sewer system with the flows noted per sub-catchment area and the accumulated flows from all upstream sub-catchment areas. Where the hydraulic

grade line of the major flow is within the storm sewer or below the ground surface, a note identifying its location shall be marked on the drawings. Overland or surface flows shall be identified with a wide directional arrow. Provision must be made for upstream development potential where applicable;

h) all swales required in the Storm Water Management Plan. Where grading is not feasible to direct surface drainage away from adjacent lots, swales shall be incorporated generally on the upstream side of the downstream lot. A municipal standard form private easement is required over any lot accepting directed drainage from upstream lots. In addition, when a swale is proposed over several lots, a lawn basin, connected to a storm sewer system, is to be provided at every third lot. Where an easement swale is designed to flow toward a municipal road or right-of-way, a lawn basin of minimum 450 mm diameter is required to intercept the drainage on the easement;

i) an inspection chamber at property line where a lawn basin connects directly to a storm sewer without going through a manhole;

j) a legend noting all items proposed in the Storm Water Management Plan. Applicable general notes should also be included;

k) a site plan showing the catchment areas involved. This generally can be at a scale of 1:5000 and set as an insert on the sheet. Where this is not physically possible, it is suggested that the catchment areas be noted on the Cover Sheet. Size of catchment areas in hectares and run-off coefficients are to be noted;

l) all catchbasins, with rim elevations;

m) all storm connections;

n) shading of fill over 0.45 m, with fill over 1 m highlighted;

o) No surface drainage shall be proposed to flow off-site over adjacent lands unless off-site works are proposed and in compliance with municipal standards. Attempts should be made to “meet” existing elevations along the development boundary;

G3.4 Road and Water

Plan and profile drawings shall show all grades, inverts, curbs, catch basins, radii, valves, hydrants, bends, ground profiles at property lines, centre line of existing road, elevations at curb returns and at quarter points, wheelchair letdowns, trees, fences, retaining walls, etc. The scale shall be 1:500 for plans and 1:50 for profile. The full pipe shall be shown for the water main on the profile. All crossover points with sewers shall be noted and where the water main is below any sewer, or is less than 0.5 m above any sewer, the water main shall be protected in accordance with Ministry of Health requirements. On the plan, a list of the water main fittings is

to be "boxed in" for each location and tied to chainages. On the profile, the fittings are to be shown and the chainages indicated. Standard road cross-sections are to be shown.

G3.5 Storm and Sanitary Sewers

Plan and profile drawings shall show grades, inverts, manholes, catch basins, etc. The scale shall be 1:500 for Plan and 1:50 for profile. Symbols to denote the service connection elevation at the property line shall be shown on the profile plan, as well as the minor and major system hydraulic grade lines. The full pipe shall be shown on the profile. All rim elevations are to be noted. All connection inverts and depths at the property line are to be shown on the plan.

G3.6 Road Cross-sections

Shall be scaled at 1:100 horizontal and 1:50 vertical and shall note the existing ground elevation, the proposed elevations of the road centre line, the curb and gutter (or road edge) and property lines. Cross-sections are required at 20 m intervals. Additional sections may be required or requested where excessive cuts or fills are involved. These plans may be by hand, provided they are of good quality and clarity. Side and back slopes are to be shown. Each sheet shall have a typical cross-section.

G3.7 Ornamental Street Lighting Plan

Shall be a 1:500 plan of the proposed street lighting, signed and sealed by a Professional Engineer qualified to do street light calculations. There shall be general notes included on the plan noting references to the Municipal standards and specifications and the appropriate design criteria. Generally, street lights shall be located at all intersections and within 1 m of the property lines. All street lighting plans shall be accompanied by photometric calculations together with the make and model of luminaire proposed.

G3.8 Street Tree and Boulevard Planting Plan

Shall be a 1:500 plan of the proposed street tree and boulevard treatment designed, signed and sealed by a Landscape Architect or a Landscape Designer. The plan shall show:

a) The location of the plant material with respect to curb, sidewalk, underground utilities, overhead utilities, driveway locations, mailbox locations, and street lights;

b) Planting detail as per Municipal standard drawings pertaining to street tree and boulevard plantings;

c) Plant list showing quantity, botanical name, common name and size of proposed trees;

d) Surface treatment of proposed boulevard strip;

e) Notation on drawing that "Final location and species selection shall be to the satisfaction of the CAO or designate";

f) Standard notes as required by the CAO or designate.

G3.9 Construction Details

Shall show all proposals for construction which are not covered or specifically detailed in the Municipal standards and specifications. Where there is a Municipal standard, the Standard Drawing number may be quoted. It is not always necessary to include details for which there is a Standard Drawing.

G3.10 Seal and Signature

The Developer's Engineer's original seal and signature shall be placed on all sheets of all design submissions except for the street tree and boulevard planting plan which shall be signed and sealed by a registered Landscape Architect or Landscape Designer. Failure to do so will result in the plans being returned without comment. The Developer's Engineer's seal and original signature and date sealed shall infer that all works as proposed are structurally sound, comply with the applicable design criteria of this Schedule, and good Engineering practice.

G3.11 Other Requirements

Notwithstanding the previously detailed requirements, the following additional information is to be noted in design submissions:

a) the size, grade, inverts, and type of material on profile sections

b) the locations, offsets, curvatures, size and identification of the mains noted on the Plan sections

c) the clearance between mains at all cross-over points

d) all existing structures, including houses, sheds, fences, wells, septic tanks and fields, shall be shown on the appropriate drawings, with a notation indicating their fate (i.e. to be removed, filled, etc.)

e) in rural subdivisions with an open ditch drainage system, note the size of future driveway culverts required to conform to the design.

f) survey monument locations and indicate which ones are to be relocated or re-established.

g) Developer's Engineers are requested to fold all drawings to facilitate processing. The Standard Title Block is to be located at the bottom right hand corner of the cover sheet for drawing sets to be included in the Servicing Agreement.

G3.12 First Submission

The first complete design submission shall consist of:

a) two complete sets of drawings

b) two additional storm water management plans

c) nine additional key plans

d) two additional street lighting plans with accompanying photometrics (lighting calculations)

e) two additional sets of street tree and boulevard planting plans, if required

f) two additional sets of water system drawings including a site and key plan with each set (for Ministry of Health approval)

h) soils report to verify road structure design (Soils reports are required on all new road construction design)

i) all applicable utility calculations (water, sanitary, storm sewer)

j) latecomer submission if applicable.

G3.13 Submission Revisions

Subsequent design submissions requiring changes to the previous submission shall consist of:

a) two complete sets of drawings

b) a complete construction estimate

c) all submissions subsequent to first submission shall have highlighted with yellow any changes made by the Developer's Engineer which are in addition to "Red Line" changes required by the Municipality

d) items "Red Lined" must be addressed by the Developer's Engineer. Failure to do so will result in submissions being returned

e) revision to latecomers submission, if applicable.

G3.14 Final Submission

The final submission for municipal acceptance shall consist of:

a) four complete sets of drawings

b) two additional storm water management plans

c) seven additional key plans

d) two additional street lighting plans

e) two additional street tree and boulevard planting plans (to be submitted to Parks Dept.) if required

f) final latecomer submission, if applicable.

G4 CONSTRUCTION COST ESTIMATE

The Operational Services Department will provide a detailed format for the breakdown of the construction cost estimate. These items and costs will be reviewed and amended where necessary.
All Hydro and Telephone civil installation costs are to be bonded, and are to be included in the calculation of the Administration fee.

G5 SERVICE RECORD CARDS

The Operational Services Department will provide, on request, a sufficient number of service record cards for each development. These cards are to indicate clearly and accurately the location, size, etc., of each municipal utility connection. The Municipal Project Number shall be required on all cards. Service Record Cards are considered part of the Record Drawing submission.

G6 RECORD DRAWING SUBMISSION

The following procedures shall be followed in the submission of Record Drawings:

a) The Developer's Engineer shall submit two complete sets of paper prints, except for the road cross-section sheets, and a complete set of connection cards for Municipal review.

b) One marked-up set of the Record Drawing paper prints will be returned to the Developer's Engineer for revision. If there are minor changes, the mylar may be revised. If amendments are numerous, it is likely that the Developer's Engineer will be requested to resubmit two sets of revised paper prints for a second review. The Municipal File Number will have been noted on each drawing for identification of the mylar drawings and the micro-films.

c) Record drawings shall be presented as follows:

(i) Key plan noting water, sanitary, storm mains, street lights, roadworks, bench marks and monuments. The plan shall show the as-constructed offsets for those works and the locations of all service connections relative to the lot lines.

(ii) Detailed plan profile drawings for water, sanitary, storm and roadworks. Elevations, inverts and offsets to show the works as constructed. The profile drawings for the utilities shall state the pipe materials used.

(iii) Where required in the design submission, the stormwater management plan including lot grading. The plan shall note the elevations at all lot corner pins, lawn basin and catch basin rims and swale inverts. Grades between lot corners and control points shall be uniform unless indicated otherwise on the plan (to a tolerance of ±150 mm). In no case shall the lot grade be less than the minimum.

(iv) Street light drawings shall show make, model and type of luminaire unit and locations of service bases and photocells.

(v) Plans of details for which there is no Municipal standard (pump stations etc.).

(vi) In all cases notes with instructions to the Contractor are to be removed or amended to indicate the results of construction. Previously existing works that have been deleted as a result of construction, or reconstructed in accordance with

design shall be removed or amended to show works as constructed. It is intended that the record drawings shall show the works as they have been constructed in order to provide accurate and detailed information when adding to, or maintaining, the works shown on the plans.

(vii) The Record Drawings shall be submitted together with service connection cards as shown in the Standard Drawings.

d) When the Municipality is satisfied with the Record Drawings submission, the Developer's Engineer will be requested to submit the following:

(i) One set of 3 mil mylar drawings identified in bold letters with the words "CERTIFIED RECORD DRAWINGS." Mylars shall be uniform in background and foreground colouring with no pieces taped together. Mylars will not be signed or sealed. The Municipal File Number must be added to each drawing

(ii) Two sets of paper prints with the following certification:

"I certify this drawing represents the works and services as designed, installed, and inspected."

The signature and seal shall be by the Engineer who personally performed or personally supervised the required inspections. One set will be returned to the Developer's Engineer upon acceptance by the Municipality.

(iii) One set of drawings, in AutoCad or DXF format, identified in bold letters with the words "CERTIFIED RECORD DRAWINGS." The Municipal File Number must be added to each drawing. Drawing files are required to:

(1) be opened using an unaltered copy of AutoCad (no third party entities, fonts etc.).

(2) be constructed entirely in model space.

(3) have the colour of entities modifiable by changing layer colours (blocks must be built on layer 0 with colour by layer).

(4) be plotted by using extents and a fit scale (or noted scale on the appropriate paper size).

(iv) One copy of the "Certificate of Inspection" (Form F-2, Appendix "D"). This form is to be signed by the Developer's Engineer.

d) When a development does not require a Servicing Agreement (i.e. site plan review, etc.), the Developer's Engineer shall provide 5 sets of as-built drawings.

Pertinent information shall include service connection sizes and locations, driveway widths, light standard locations, and a stormwater management plan including MBEs.

SECTION "R" - ROAD

R1 INTRODUCTION

All roads in the Municipality shall be designed in accordance with the recommended practice as outlined in the latest edition of the "Manual of Geometric Design Standards for Canadian Roads" and the "Urban Supplement to the Geometric Design Guide for Canadian Roads", as applicable, as published and amended from time to time by the Canadian Transportation Association of Canada (TAC) or as stated elsewhere in this Schedule or as accepted by the Chief Administrative Officer or designate.

R2 CLASSIFICATIONS

The Municipality will advise the Developer of the Classification of each road within or adjacent to any particular development. The design of these roads shall be in accordance with the Standard Drawings for each road type. Generally, the following criteria will be applicable, although traffic volumes, cut and fill slopes, the requirement for turn lanes and predominant type of development may require adjustment to these widths:

Classification	*Right-of-Way Width (m)*	*Pavement Width (m)*	
		Urban Curb to Curb	*Rural* [4]
Urban Arterial Undivided	25	15	
Rural Arterial	20		7.3 m+shldrs
Collector (Commercial & Industrial)	24	15	
Collector (Multi Family Residential) [1]	22	12.2	
Collector (Single Family Residential) [1]	20	11	7.3 m+shldrs
Local (Residential) [2]	20	8.6 - 11	6.8 m
Limited Local (Residential) [3]	18	8.6	6.8 m
Local (Residential Frontage Road)	16	8.6	
Local (Commercial)	20	11	
Local (Industrial)	20	12.2	
Lane	6	5.5	

Notes: [1] Depending on expected adjacent zoning density and traffic generation.
[2] 11 m pavement in areas of predominantly multi family developments.
[3] 20 m ROW for Rural road.

R3 GRADES

The maximum longitudinal grades generally shall be as follows:

a)	local residential roads:	Rural	12%
		Urban	8%
b)	cul-de-sac		10%
c)	collectors, industrial and commercial roads		10%
d)	arterials		6%

The minimum longitudinal grade generally shall be 0.5%.

Where topographical constraints restrict the attaining of the minimum or maximum grade, the Chief Administrative Officer or designate may consider variations to the above limits. Under no circumstances should the grades be less than 0.35 % or more than 12%.

Where sidewalks are required refer to Section on Sidewalks.

R4 CROSS-SLOPES

Standard cross-slopes on streets shall be 2% with the crown point in the centre of the pavement.

Where extreme topography is involved, limited local roads may be designed with cross-slopes from 1% to 3% and with one-way cross falls subject to the acceptance of the Chief Administrative Officer or designate.

Super elevation shall be used on curves of high speed roads, 60 km/h design speed or greater and at the discretion of the Chief Administrative Officer or designate.

R5 HORIZONTAL AND VERTICAL CURVES

Horizontal and vertical curves shall be governed by the design speed of the road as follows:

		Urban	Rural
a)	Rural and Urban locals	50 km/h	50 km/h
b)	Rural and Urban collectors	60 km/h	70 km/h
c)	Rural and Urban arterials	70 km/h	80 km/h

The criteria contained in the TAC "Manual of Geometric Design Standards for Canadian Roads" concerning horizontal and vertical curves shall be followed. Note: Posted speed may vary from Design Speed.

Where topographical and existing development constraints restrict the attaining of the above design speeds, the Chief Administrative Officer or designate may consider variations.

Maximum allowable superelevation for arterial and collector roads shall be 4%. No superelevation is required for local roads.

R6 CURB RETURNS

Curb return radii shall be as follows:

	Intersection with		
	Local/Frontage	*Collector*	*Arterial*
Lanes **	3 m	with 3:1 flare to property corners	
Locals	7 m	9 m	11 m
Industrial Locals	9 m	10 m	11 m
Collectors	9 m	10 m	10 m
Arterials	11 m	10 m	*

* Curb return radii at arterial roads require specific designs taking into account projected volumes, turning movements, truck traffic, whether turning lanes are provided, etc.

** Where lanes intersect with each other specific designs are required taking into account the design vehicle predominantly using the lanes, and sight line restrictions due to buildings, fences, etc.

The Chief Administrative Officer or designate may require variations to protect pedestrians and to preclude instances where awkward geometry may otherwise result in vehicles turning into the path of other oncoming vehicles.

Corner truncations shall be required at all street corners to maintain a minimum 4 m distance from curb face to property line.

R7 CUL-DE-SACS

Design of cul-de-sacs shall follow the applicable Standard Drawings.

The following minimum radii shall apply:

Road	*Pavement Radius (m)*	*ROW Radius (m)*
Rural	11	14
Residential	11	14
Multi-Family Residential	11	14
Commercial	14	17
Industrial	14	17

The design of cul-de-sacs is not limited to the above and the designer may propose alternatives provided that good engineering practice is followed. Alternative designs are subject to review by the Chief Administrative Officer or designate.

R8 TEMPORARY TURNAROUNDS

In cases where the proposed road exceeds 50 m in length and is to be extended in the future, temporary turnarounds shall be required.

A temporary turnaround for rural road can be by way of a hammerhead design. See Standard Drawings for details.

R9 INTERSECTIONS

Particular attention shall be given to the design of all intersections. The designer should employ good engineering practice as set out by TAC in assessing the following concerns:

a) Approach grades and grade transitions
b) Crossing sight distance
c) Design speeds
d) Intersection cross-slopes
e) Curb Returns
f) Intersection alignment

Specifically, grades of major and minor roads at intersections shall be adjusted where topographic or other conditions dictate the use of maximum or near maximum permissible grades. Such adjustments are essential to provide reasonable stopping opportunities during extreme roadway icing conditions.

R10 CROSS-SECTION CONSIDERATIONS

The basic design road width and thickness shall be determined by:

a) The Standard Drawings applicable and,

b) The results of soils tests and analysis of Benkleman Beam tests, or by the CBR asphalt pavement design method. (See also Section on Road Base and Pavement Design.)

Maximum side slope in earth fills or cuts shall be 1.5H : 1V. Flatter slopes shall be used where unstable soil conditions are encountered. If cut or fill slopes extend beyond the road allowance, a right-of-way sufficient to support the slope plus 1 m shall be registered in favour of the Municipality.

In developed urban areas, wherever the side slopes beginning at a point 600 mm from the back of the sidewalk create a depth of vertical cut or fill at the existing property line in excess of 600 mm at 2H : 1V slope, a concrete retaining wall shall be constructed unless otherwise permitted by the Chief Administrative Officer or designate. Retaining walls, if required, shall be placed within private property, adequately drained, contain a vehicle and pedestrian access to each property, and be equipped with railings.

Where applicable, the design shall ensure that the road cross-sections are established to accommodate the Major Flood Path Routing.

R11 ROAD BASE AND PAVEMENT DESIGN

The structural design of the road pavement shall be adequate for an expected road life of 20 years under the expected traffic conditions for the class of road.

a) Existing Road Upgrading

Road construction and asphalt overlay design shall be based on the analysis of the results of the Benkleman Beam tests and test holes carried out on the existing road which is to be upgraded, by the CBR asphalt pavement design method, or by another pre-approved method.

b) New Road Construction

The design of new roads shall be based on the results of the analysis of materials from test holes dug on the proposed road site at representative intervals, by the CBR asphalt pavement design method, or by another pre-approved method.

Test holes and samples shall be undertaken by a qualified soils test company and all reports shall be signed and sealed by a qualified Geotechnical Engineer.

Where the Benkleman Beam design method is used, the Maximum Seasonally Adjusted Design Deflections (mean plus two standard deviations) shall be as follows:

Classification	*Min Sub-base mm*	*Min Base mm*	*Min Asphalt*		*Max Seasonally Adj Design Defn (mm)*	
			Base mm	*Surface mm*	*Base*	*Pavement*
Urban Arterial	300	100	60	40	1.90	1.00
Urban Collector	300	100	50	40	2.20	1.20
Urban Local	200	100	50	35	2.60	1.50
Urban Ltd Local	200	100	50	35	2.60	1.50
Lane	200	100	65	-	3.10	1.50
Rural Art & Coll	300	100	50	40	2.20	1.20
Rural Local	200	100	75	-	3.40	1.50
Rural Ltd Local	200	100	75	-	3.40	1.80
Indust Loc & Coll	300	100	50	35	1.75	1.00

Note 1: Recommended sub-base and base thicknesses are minimum requirements only. Site conditions may dictate greater thicknesses of granular material to achieve design rebound.

Note 2: Where rebound readings are greater than the design reading for the base course, the subgrade should be investigated for potential weakened areas.

Note 3: The standard pavement material is hot mixed, machine laid, asphaltic concrete.

Note 4: When the base and surface courses are required, the surface course is to be withheld until building construction is complete.

R12 PAVING PROCEDURE

The paving of all roads with curb and gutter shall be done in 2 lifts in thicknesses as stipulated in the Road Base and Pavement Design section.

a) The asphaltic base course shall be laid on a pre-determined and adequately compacted aggregate road base.

b) The final lift shall be laid on the primed asphaltic base course prior to one year from the completion inspection or at such time that all construction in the development is substantially complete and all foreseeable utility construction and service connections are complete.

Note: Asphalt deflectors may be required to direct road surface runoff into catch basins until the final lift is laid.

The paving and upgrading of existing roads shall be done in accordance with the recommendations noted from the Benkleman Beam results. The designer shall conform to all Municipal requirements for new road construction design.

When it is deemed physically or economically unfeasible to conform to new road construction design criteria, the CAO or designate may consider alternatives outside the limits noted in this Schedule.

R13 DRIVEWAYS

R13.1 Residential Access to Arterial Roads

Residential driveway access to an arterial road is not permitted unless alternate access is not possible. Wherever physically possible, alternate local road access shall be dedicated to preclude residential driveways accessing directly onto arterial roads.

R13.2 Number of Driveways

Driveway crossings, from the road pavement to the property line, shall conform to the applicable Standard Drawings. Where a proposed residential lot abuts roads of different classifications, the principal driveway shall be located to access the road of the lower classification.

(a) Urban Residential Zones

- One driveway per road frontage.
- A second driveway permitted for corner lot if driveway not on an arterial road.
- Where a proposed residential lot abuts roads of different classifications, the principal driveway shall be located to access the road of the lower classification.

(b) Suburban, Rural, Commercial, Industrial, Institutional, Comprehensive and Multifamily developments

Upon demonstrated need and approval from the Chief Administrative Officer or designate, more than one access may be granted.

R13.3 Driveway Location and Width

(a) Residential Zones

Driveways in urban developments with barrier curbs will require letdowns to Municipal standards. Driveways located on corner lots shall be no closer than 7 m from the lot corner nearest the intersection. All urban residential driveways shall have a minimum width of 4 m and a maximum width of 7.5 m.

(b) Commercial, Industrial, Institutional, Comprehensive and Multifamily developments

Driveways to Commercial, Industrial, Institutional, Comprehensive and Multifamily corner lots shall be located no closer than 15 m from the property line of the adjoining road. See Standard Drawings for typical layouts.

The minimum width of a driveway to a property having one or more accesses shall be 4.5 m for one way access and 6.5 m for two way access with a maximum of 11 m. Where a corner lot adjoins a road of different classification, the principal driveway shall be constructed so as to access the road of the lower classification, except for service stations where access may be provided from both adjoining roads.

R13.4 Driveway Grades

Driveway access grades shall be designed to permit the appropriate vehicular access for the zone, without "bottoming-out" or "hanging-up." From edge of pavement to property line, the driveway shall follow proper boulevard slope to drain towards the road. For the first 10 m on private property, the maximum driveway grade shall be 15% if accessing a local road. This maximum grade shall be limited to 10% if accessing a collector or arterial road, or if a commercial or industrial zone.

R13.5 Driveway Letdown and Curb Return

At the discretion of the Chief Administrative Officer or designate, access to large parking areas, commercial, industrial and multifamily developments may be by curb returns rather than a driveway letdown.

The Chief Administrative Officer or designate may require deceleration and acceleration lanes for access off major roads for safety reasons and to minimise disruption to traffic flows. Design of such access shall follow the recommendations in the Ministry of Transportation and Highways, Highway Engineering Branch "Design Manual."

R14 EMERGENCY ACCESSES

In consultation with the Fire Department, the Chief Administrative Officer or designate may require the installation of emergency accesses in urban developments as shown on Standard Drawings. Such emergency access must be able to support a wheel axle load of 9.1 tonnes.

Curb letdown shall be provided when an emergency access meets a road which has a barrier curb.

Rural emergency accesses or temporary emergency accesses in urban developments will require a special design. The travel surface may be of asphalt and fencing may not be required. However, vehicular restriction devices must be designed for each end, as required.

Where there is a reasonable expectation that a rural development will be urbanised in the near future, an urban standard emergency access will be required.

R15 BOULEVARDS

Street trees and boulevard plantings of a species and spacing acceptable to the CAO or designate will be required in Commercial and Industrial zones. Planting shall be in accordance with Standard Drawings pertaining to street tree and boulevard plantings.

Topsoil and turfing of boulevards may be required at the discretion of the CAO or designate or the Chief Administrative Officer or designate where it appears that the boulevards will not be developed or upgraded in the near future.

R16 SIGNAGE

All traffic signage and pavement markings required for each project will be installed by the Municipality at the Developer's expense. Depending on the size of development, the Chief Administrative Officer or designate may require the Developer to engage an engineering consultant to provide traffic signage and pavement marking drawings to the Municipality.

R17 DEVELOPMENT TRAFFIC ACCESS AND IMPACT STUDIES

In certain instances, the Developer may be required to perform a traffic study in accordance with the Municipality's Standard Terms of Reference for a Development Traffic Access and Impact Study. Except for single family developments, a study may be required if, in the opinion of the Chief Administrative Officer or designate, any of the following conditions exists:

a) The proposed development will generate 100 or more additional peak direction trips (in-bound or out-bound) to or from the site during the adjacent street's peak hour or the development's peak hour.

b) The proposed development is adjacent to a roadway or intersection with localised safety or capacity deficiencies.

c) The development is adjacent to a sensitive neighbourhood.

d) Other specific local traffic problems exist which may affect the ability of the road system to accommodate the proposed development.

R18 CURBS, SIDEWALKS AND WALKWAYS

R18.1 Curbs and Gutters

All full urban roads shall be complete with concrete curbs and gutters on both sides of the road.

All commercial, industrial, and residential roads 12.2 m in width and wider shall have barrier curbs.

Residential roads 11 m or less in width shall have rollover curbs, except when next to schools, parks or multi family developments, in which cases barrier curbs are required. Existing development may be reconstructed to a different pre-approved standard.

Narrow base curbs as shown on the Master Municipal Construction Documents Standard Detail Drawing C4 are permissible. In Commercial and Industrial areas the wide base C5 shall be used.

Where major flood path routing dictates, and on steep grades, the designer may propose barrier curbs on residential roads 11 m or less in width, provided that pre-determined driveway accesses are incorporated in the design.

The transition between barrier and rollover curbs shall be done through a minimum distance of 2 m.

The road support structure shall be constructed to a point 0.3 m wider than the curb in order to provide support for the curb.

R18.2 Wheelchair Ramps

Wheelchair ramps are required at all intersections and where deemed appropriate by the Chief Administrative Officer or designate, even where rollover curbs are installed. The design for wheelchair ramps shall be in accordance with the Standard Drawings.

Special designs for the assistance of the physically handicapped shall be encouraged.

A catchbasin must be located to intercept road drainage in advance of the wheelchair ramp. This may influence road grade designs or cross slopes.

R18.3 Sidewalks

Sidewalk requirements are stipulated in the cross-sections for the applicable road classifications, and shall be constructed as per the Standard Drawings.

If only one sidewalk or one row of streetlights are required, they shall be placed at the side opposite to the power and telephone corridor except for half roads.

For cul-de-sacs longer than 100 m, a sidewalk will be required on one side of the access road to the bulb portion to the first property line within the bulb. Where a walkway is proposed off the bulb portion, the sidewalk is to be extended around and connected to that facility. Cul-de-sacs shorter than 100 m may not need a sidewalk.

All urban through roads, and all roads in Commercial zones, shall require sidewalks on both sides. The Chief Administrative Officer or designate may require that the width of sidewalks along arterial roads be greater than 1.5 m. Where a sidewalk is adjacent to a curb and fronts a school, it shall be 2 m wide.

Urban local roads require a sidewalk on one side and Urban collector roads require a sidewalk on each side. Sidewalks shall be continuous around curb returns and for a minimum of 3 m after the curb return into roads not requiring sidewalks.

The grade of the sidewalks shall be consistent with the grade of the road. Sidewalks with grades greater than 16.0% shall have raised concrete treads formed into the sidewalk, 0.6 m wide, located at the back of the sidewalk, 0.10 m long, 0.015 m high, and spaced at 0.45 m o.c.

All sidewalks adjacent to or separate from rollover curbs shall be 120 mm thick. All sidewalks adjacent to or separate from barrier curbs shall be 100 mm thick.

For a combined curb and sidewalk or a separate sidewalk, the sidewalk base shall be constructed as an extension to the road base to a point 0.3 m wider than the edge of the sidewalk.

R18.4 Walkways

Walkways shall be constructed in accordance with the Standard Drawings. Walkway pavement width shall be 2.85 m and walkway right-of-way width shall be a minimum of 3 m.

Urban walkways shall be concrete with chain link fencing on both sides and bicycle baffles at both ends.

The maximum grade shall not exceed 12%, unless steps, wheelchair ramps and hand rails independent of the chain link fencing are provided.

R18.5 Handrails

Handrails shall be constructed in accordance with the Standard Drawings.

Handrails shall be required for walkways where grades are in excess of 12% or where steps are provided or where grade separation exceeds 0.6 m. Handrails shall be required at the back of sidewalks where grades are in excess of 16.0%.

Handrails may also be required along the top of major storm sewer outfalls, along walkways and sidewalks where steep or excessive side-slopes may be encountered, or in any location as deemed necessary by the Chief Administrative Officer or designate where, in his opinion, the safety of pedestrian traffic or the protection of the public so requires.

R19 TRAFFIC CALMING DEVICES

Speed humps shall be the primary device for traffic calming. The speed humps shall be 3.6 to 4.3 m in length, 0.12 to 0.15 m in height at the centre and constructed of asphalt. Appropriate signing and pavement in marking shall also be installed. Speed “bumps” shall not be used.

Special designs are required for other traffic calming devices such as diversions, roundabouts, curb bulges and raised intersections. All traffic calming devices shall be designed in accordance with the recommended practice as outlined in the “Traffic Calming Guide” published by the Institute of Transportation Engineers and the Transportation Association of Canada.

The necessity or requirement of any traffic calming devices is at the discretion of the Chief Administrative Officer or designate.

SECTION “D” - DRAINAGE

D1 INTRODUCTION

The purpose of the drainage design criteria is to standardise the procedures for designing common drainage facilities in the District of Port Hardy. All drainage works shall be designed with considerations for public safety, regulatory requirements, economic benefits and the natural environment.

Designers shall consult with the Operational Services Department to determine what existing information may be of assistance to them.

The presence of an existing municipal drainage system does not mean, or imply, that the system has adequate capacity to receive the proposed design flows, nor does it indicate that the existing system pattern is acceptable to the Municipality. Existing facilities which are undersized or inadequate to accept additional drainage must be upgraded at the Developer's expense to accommodate the appropriate flows. Alternative drainage proposals may be considered.

It must be shown that all downstream drainage facilities for a distance of 1.5 km are capable of handling the projected increase in runoff created by the proposed development.

Proper erosion and sediment control is required for all developments or works discharging runoff into the municipal drainage system and/or natural watercourses.

D2 STORMWATER MANAGEMENT PRINCIPLES

D2.1 Definition

Stormwater Management is the planning, analysis and control of storm runoff in consideration of the entire watershed. The design of the drainage system shall incorporate techniques such as minor-major systems, lot grading, surface infiltration, subsurface disposal, storage, erosion control and other acceptable methods to mitigate the runoff impacts due to changes in land use.

A comprehensive Stormwater Management Plan is required for all developments except in rural areas where lots are 0.4 ha and over, unless otherwise noted. The plan shall include all drainage facilities, lot grading (showing pre and post-development ground elevations), major flood path routing, and all other appropriate information pertinent to the design.

D2.2 Minor and Major Systems

The Minor System comprises storm sewers, culverts, channels and flow control facilities designed to collect and carry the runoffs from more frequent storm events. Flow control facilities include detention/retention ponds, and other acceptable methods suitable for reducing the rate of runoff into the downstream drainage system.

The minor system shall be designed to prevent flooding and property damage and minimise public inconvenience caused by the frequent storm events up to the return frequency. The runoff from the minor storm is referred to as the minor flow.

The Major System comprises surface flood paths, swales, roadways, major culverts, watercourses and flow control facilities designed to accommodate the runoff from rare and intense storms.

The major system shall be designed to protect the public and prevent significant property damage due to floodings caused by the rare storm events with the return frequency. The runoff from the major storm is referred to as the major flow.

Roadways, overland flow paths, channels and watercourses shall be designed to ensure that the maximum hydraulic grade line is below the lowest existing or proposed minimum building elevation of adjacent buildings. Surcharging at the inlet under the major flow is acceptable provided the headwater profile does not rise above the Minimum Building Elevation. Adequate erosion protection shall be required where surcharging is proposed.

In the event that surface flow is not feasible or that the inlet facility is likely to be blocked or restricted, consideration shall be given to sizing the storm sewer system to accommodate the major flow.

D3 DESIGN FREQUENCIES

The following storm return frequencies shall be used for the design of the drainage system:

Minor Systems: 1 in 5 year

Major Systems: 1 in 25 year

Under special circumstances, drainage facilities in major watercourses may be required to accommodate flows with return frequencies greater than 1 in 25 year. The Designer should confirm the required return frequency with the Chief Administrative Officer or designate.

D4 RUNOFF ANALYSIS

Storm drainage systems shall be designed to accommodate the post-development flows using the Rational Method or a Computer Generated Storm Sewer Model. All calculations pertinent to the design of the drainage system shall be signed and sealed by the design engineer and submitted to the Municipality.

For developments where the total tributary area is 10 hectares or less, the Rational Method shall be used to compute the peak runoffs.

For developments where the total tributary area is greater than 10 hectares, a Computer Generated Storm Sewer Model is used to compute the peak runoffs. Any Computer Generated Storm Sewer Model used by the consultant must be pre-approved by the Chief Administrative Officer or designate.

D5 RATIONAL METHOD

The Rational Method calculates the peak flow using the formula:

Q = RAIN

Where R = Runoff Coefficient x Soil Adjustment Factor (SAF)
A = drainage area in ha
I = rainfall intensity in mm/h
N = 0.00278

D5.1 Runoff Coefficients

The following runoff coefficients shall be used for the Rational Formula:

Land Use	*Percent Impervious*	*5 Yr Runoff Coeff*	*100 Yr Runoff Coeff*
Suburban Residential *	20	0.35	0.40
Low Density Residential	40	0.50	0.55
Medium Density Residential	65	0.60	0.65
High Density Residential	78	0.70	0.75
Commercial	90	0.80	0.85
Industrial	90	0.80	0.85
Institutional (i.e. Schools)	80	0.75	0.80
Parks/Grasslands	20	0.20	0.30
Cultivated Fields	30	0.30	0.40
Woodlands	5	0.10	0.30

* Average lot 0.5 ha or greater

D5.2 Soil Adjustment Factor

A soil adjustment factor (SAF) shall be applied to the runoff coefficient to reflect the local ground conditions.

Surface Type	SAF
Sandy soil with flat slope (up to 5%)	0.9
Sandy soil with steep slope (over 5%)	1.0
Clayey soil with flat slope (up to 5%)	1.0
Clayey soil with steep slope(over 5%)	1.1

The runoff coefficients and soil adjustment factors listed above are for general application. The Designer shall verify that the coefficient is appropriate for the design area. The Chief Administrative Officer or designate will be the final authority on the coefficient to be utilised.

D5.3 Catchment Area

The tributary area used for the design of the storm drainage system shall be consistent with the actual contours of the land. Although minor changes in the catchment boundaries may be necessary for development, the total developed tributary area should not deviate from the total natural drainage area.

While contour maps provided through the Engineering Department are reasonably indicative of the actual conditions, designers are cautioned not to interpret them to be exact and correct. The Designer is responsible for obtaining true and accurate surface elevations for the analysis.

D5.4 Time of Concentration

The time of concentration is the time required for water to flow from the most remote part of the catchment area under consideration to the design node. For both urban and rural areas, the time of concentration consists of the following formula:

$$Tc = Ti + Tt$$

Where Tc = time of concentration (minutes)
Ti = inlet or overland flow time (minutes)
Tt = travel time in sewers, ditches, channels or watercourses (minutes)

Inlet or Overland Flow Time (Ti)

a) Typical inlet times for urban areas are as follow:

Single-family Lot	15	minutes
Multi-family Lot	8	minutes
Commercial/Industrial/Institutional	5	minutes

b) The inlet time in rural areas shall be calculated using the Airport Method:

$$Ti = \frac{3.26 (1.1 - C) L^{0.5}}{S^{0.33}}$$

Where
- Ti = inlet time (minutes)
- C = runoff coefficient (Section D5.1)
- L = travel distance (m), maximum length = 300 m
- S = slope of travel path (%)

Travel Time (Tt)

The travel time in sewers, ditches, channels or watercourses can be estimated using the following formula:

$$Tt = \frac{Ct \; L \; n}{12 \; s^{0.5}}$$

Where
- Tt = travel time (minutes)
- Ct = flow travel coefficient (0.5)
- L = length of flow (m)
- n = roughness coefficient
  - 0.050 Natural channels
  - 0.030 Excavated ditches
  - 0.013 Concrete lined channels
  - 0.013 Concrete or PVC pipe
- s = slope in m/m

The above equation provides an approximate travel time which shall be corrected with the actual time of flow calculated from the hydraulic properties of the selected pipe/channel. A composite value for Tt shall be calculated in cases where the type of flow along the longest path varies or the slope changes.

D5.5 Rainfall Intensity

The rainfall intensity for the Rational Formula shall be determined from a rainfall Intensity-Duration-Frequency (IDF) curve based on the calculated time of concentration. The appropriate IDF curve is attached as Figure D1 unless figures D1 & D2 are found

D5.6 Presentation of Rational Calculations

The Designer will be required to tabulate the rational calculations on Table D1 for submission along with the appropriate plans and other relevant information.

Table D1

Q = RAIN

Q = Runoff (m3/s)
R = Runoff Coeff X SAF
A = Area (ha)
I = Rainfall Intensity (mm/h)
N = 0.00278

Ti = Inlet time (min)
Tt = Travel Time
Tc = Time of Conc (min)
Qcap = Capacity (m3/s)

O = Pipe Diam (mm)
N = Roughness coeff
S = Slope of Pipe (%)
V = Velocity (m/s)
L = Length (m)

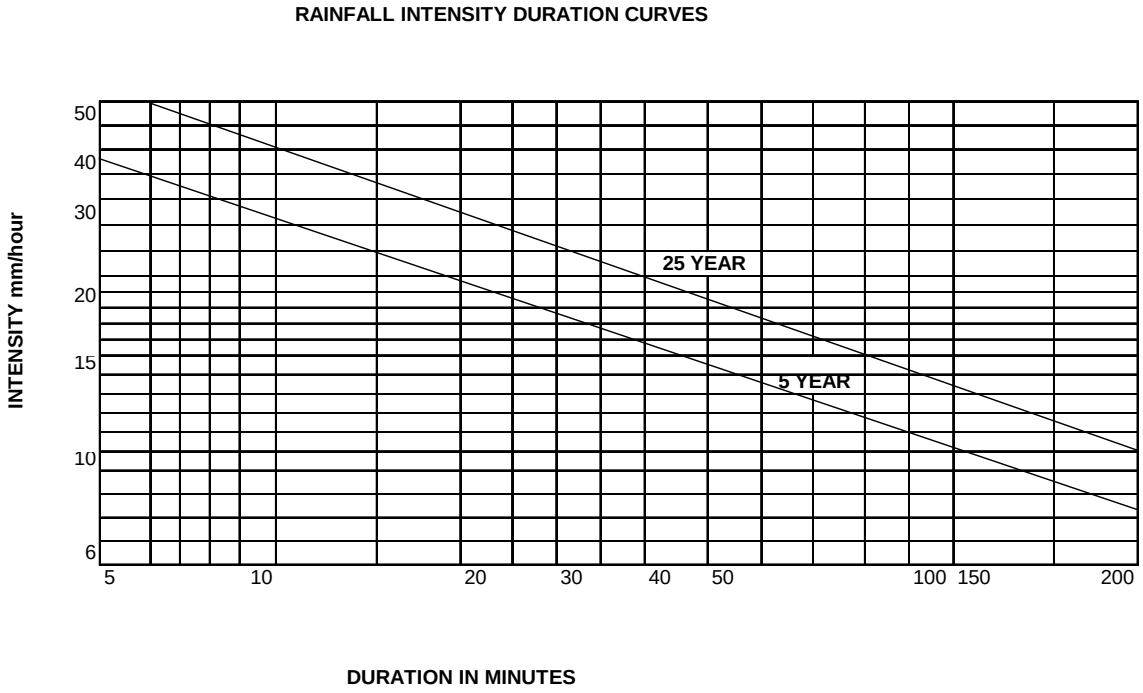
Location _____
Ref No. _____

Storm Frequency _____ Year

Date:
Calc By:
Sheet ____ of _____

			Tributary Area			Time of Flow			Storm		Sewer Design						Adj Tt min	Comments	
Location	From	To	R	A (ha)	RA	Ti (min)	Tt (min)	Tc (min)	I (mm/h)	Q (m3/s)	Qcap (m3/s)	0 (mm)	N	s (%)	V (m/s)	L (m)			

Figure D1


RAINFALL INTENSITY DURATION CURVES
INTENSITY mm/hour
50
40
30
20
15
10
6
25 YEAR
5 YEAR
5
10
20
30
40
50
100
150
200
DURATION IN MINUTES

D6 RUNOFF HYDROGRAPH METHOD

D6.1 Selection of Modelling Program

For basins larger than 10 hectares, hydrologic programs shall be used for runoff analyses. The EPA-Stormwater Management Model (SWMM) and other hydrologic programs may be considered if their uses are deemed necessary and approved by the Chief Administrative Officer or designate.

D6.2 Watershed Data

Watershed data includes catchment areas, percent of imperviousness, lengths of flow, surface slopes, soil types (CN value), etc.

The tributary area used for the design of the storm drainage system shall be consistent with the actual contours of the land. Although minor changes in the catchment boundaries may be necessary for development, the total developed tributary area should not deviate from the total natural drainage area.

While contour maps provided through the Engineering Department are reasonably indicative of the actual conditions, designers are cautioned not to interpret them to be exact and correct. The Designer is responsible for obtaining true and accurate surface elevations for the analysis.

The imperviousness of common land uses are tabulated in Section D5.1.

For design purposes, the drainage model shall be based on the post-development conditions using the most current planning information. Conservative parameters shall be selected if calibration data is not available.

For assessment of existing systems, the drainage model may be based on the existing conditions if no future land use changes are anticipated. Some parameters may be adjusted in order to calibrate the drainage model.

D6.3 Presentation of Modelling Results

The Designer will be required to submit a drainage report including the followings:

a) name and version of modelling program
b) design storms and default parameters
c) schematic diagram of the model
d) drainage map showing the catchment and sub-catchment boundaries, slopes, land uses, soil conditions, etc.
e) input and output printouts and computer files

D7 STORM SEWERS AND APPURTENANCES

D7.1 Sizing of Storm Sewers

The required storm sewer capacity shall be calculated using the Manning Formula under free flow (non-surcharged) condition. The Manning formula is:

$$Q = \frac{A\, R^{0.667}\, S^{0.5}}{n}$$

Where Q = flow capacity (m^3/s)
A = cross-sectional area (m^2)
R = hydraulic radius (m)
S = slope of hydraulic grade line (m/m)
n = roughness coefficient
0.011 for PVC pipe
0.013 for asbestos cement, clay and concrete pipe
0.024 for corrugated metal pipe (CMP)
0.020 for paved invert CMP

NOTE: Asbestos cement pipes, clay pipes and corrugated pipes are not acceptable for new storm sewers.

Downsizing of storm sewers will not be accepted for sizes 600 mm diameter or less. A maximum downsizing of two pipe sizes for storm sewers larger than 600 mm diameter will be considered.

The minimum size of storm sewers shall be 250 mm diameter except at a terminal section of a short cul-de-sac with no catch basin connections where the size may be reduced to 200 mm diameter.

For the purpose of reference in this section, large diameter sewer refers to sizes 675 mm or larger, and small diameter sewer refers to sizes 600 mm and smaller.

D7.2 Minimum/Maximum Velocity

The minimum velocity for pipes flowing full or half full shall be 0.60 m/s.

There is no limit on the maximum velocity. However, if the design velocity exceeds 3.00 m/s and/or supercritical flow occurs, provisions for structural stability and durability of the pipe shall be included. Anchor blocks are required where the pipe grade is steeper than 15%.

Where drainage discharge enters a natural watercourse, DFO and MOELP generally require adequate rip rap protection and limit the maximum velocity to 1 m/s.

D7.3 Minimum Depth of Cover

The minimum depth of cover shall be 1.2 m for storm sewers up to 600 mm diameter. For pipe sizes larger than 600 mm, or for cover less than that specified above, an engineering design for cover will be required.

The depth of storm sewers shall be adequate to service all adjacent developments as well as all existing properties within practical limits. The invert of storm sewers at the upstream end must be of sufficient depth to service all of the tributary lands. In common trench installations, the sanitary service connections shall be permitted to cross over the top of the storm sewer.

D7.4 Pipe Joints

All storm sewer systems shall be designed for closed joint construction unless otherwise specified.

D7.5 Curvilinear Sewers

Where curvilinear sewers are proposed, the minimum radius should not be less than 60 m and only where the maximum joint deflection is one half of the pipe manufacturers' recommendations.

Video inspections are required for curvilinear sewers as directed by the Chief Administrative Officer or designate.

D7.6 Sewer Location

Storm sewers shall be designed inside the road right-of-way using the offsets in the typical road cross-sections in the Standard Drawings. Sewers and manholes should be offset from the vehicular wheel paths wherever possible to minimise the roughness of travel.

Where the storm sewer is required to cross private lands, the right-of-way shall have a minimum width of 3 m. Where both storm and sanitary sewers are located within a single right-of-way, the minimum width shall be 4.6 m.

When a storm sewer and other appurtenances (i.e. manholes, valve chambers, etc.) are located within a right-of-way, the Developer will, for maintenance purposes, be required to provide vehicular access from an existing municipal road. The maintenance access shall be constructed to Municipal standards adequate to support the maintenance vehicles for which the access is intended. Where an access is required, the access is to be located entirely on one lot.

D7.7 Utility Separations

Refer to Water Design Criteria action for clearance with water mains. For clearances with other utilities such as BC Gas, BC Tel, BC Hydro, etc., consult the respective authorities.

D7.8 Manholes - Standard Requirements

Manholes are required at:

* every intersecting sewer
* all changes in pipe size
* every 135 m for pipes less than 900 mm diameter
* every 135 m for pipes 900 mm diameter and larger
* all changes in direction that exceeds 1/2 of the maximum joint deflection recommended by the pipe manufacturer.
* downstream end of curvilinear sewers

Common design requirements are:

a) The springline of the downstream pipe shall not be higher than that of the upstream pipe.

b) Outside drop connections shall be provided wherever the drop exceeds 0.6 m. For incoming pipes 600 mm and larger in diameter, special drop design will be required.

c) Sudden and extreme changes in direction for large sewers should be avoided.

d) For sewers 675 mm and larger with 90° directional change, the ratio of the radius of bend (measured to the pipe centreline) to the pipe inside diameter should be greater than 2. Otherwise, the maximum bend deflection at one point shall be 45° (i.e. use two 45° bends to turn 90°).

e) 90° bends in sewers 675 mm and larger shall not be located inside a junction with other sewer connections. Separate manholes are required.

f) To minimise the head loss in sewers 675 mm and larger, high incoming flows from opposite directions should not impinge in the same manhole structure. Separate manholes are to be used.

g) Manhole anchorage may be required for 90° bends with large flows or high velocity flows.

h) Intermediate safety platforms are required for all manholes in excess of 6 m deep.

D7.9 Manholes - Hydraulic Losses

Invert drops across manholes are required to compensate for the hydraulic (energy) losses due to changes in flow directions. The required drop in invert levels is the hydraulic loss across the manhole.

For junctions involving large diameter sewers or high velocity flows, detailed engineering analyses may be required. For small diameter sewers (600 mm or smaller) and low velocity flows, the following equation can be used to calculate the head loss:

$$H_L = k\frac{V^2}{2g}$$

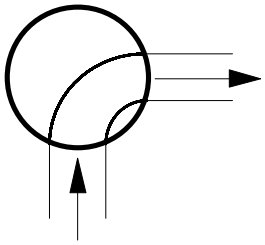
Where H_L = head loss (m)
k = head loss coefficient
V = outlet flow velocity (m/s)
g = gravitational acceleration (9.81 m/s^2)

The minimum drops are:

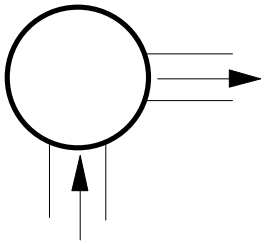
*	straight run	no drop required
*	deflections up to 45°	20 mm drop
*	deflection 45° to 90°	30 mm drop

Head loss coefficient k is related to the type of connections and the type of benching inside the manhole.

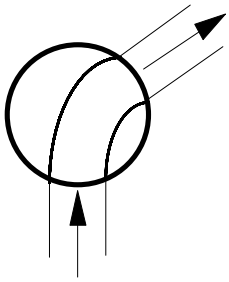
Manhole Bends



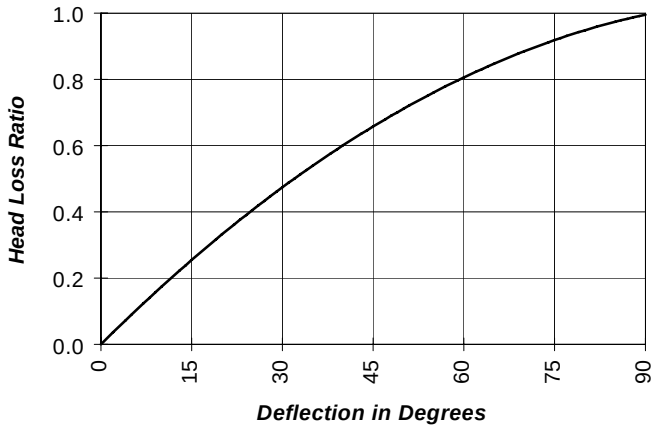
k = 1.0
for 90 degree manhole bend with channelized benching up to the crown of pipe to deflect the full flow



k = 1.5
for 90 degree manhole bend with no channelized benching (or only partial channelized benching up to springline)

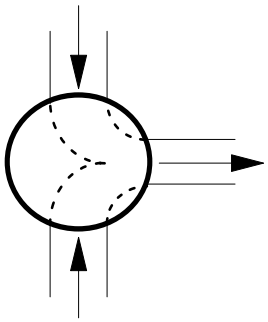


k is determined
by multiplying the head loss coefficient k for a 90 degree manhole bend and type of benching by the head loss ratio factor in Figure D2 unless Figures D2 to D6 are

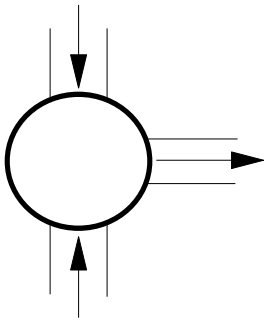


Head Loss Ratio Factor for Bends Figure D7

Manhole Tees with Side Outlets

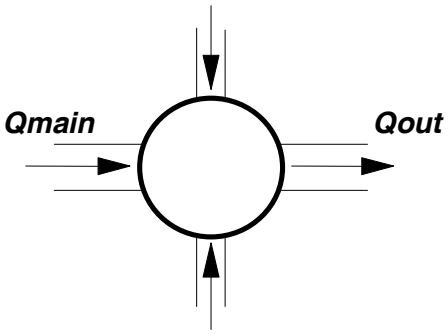


k = 1.0
for tee manhole with deflector between incoming pipes for the full depth of flow.

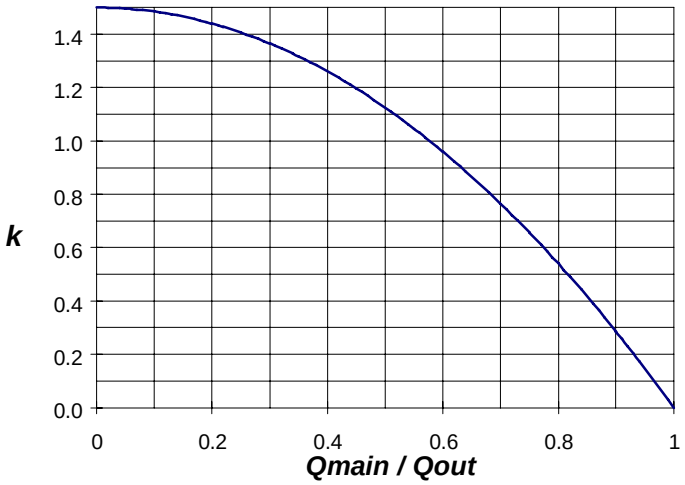


k = 1.5
for tee manhole without deflector between the incoming flows.

Manhole Crosses or Tees with Side Inlets



Use Figure D3 (below) to determine the value for k. Proper channelized benching shall be incorporated in the design to maximize the flow velocity to the outlet direction. If opposite inflows impinge inside the manhole, separate manholes should be considered.



Head Loss Coefficient for Junctions Figure D3

D7.10 Catch Basins

Catch basins shall be provided at regular intervals along roadways, at upstream end of radius at intersections and at low points (sags). Low points are not to be located within curb returns at intersections. The Designer must ensure that sufficient inlet capacity is available to collect the entire minor flow into the underground pipe system.

The spacing of the catch basins shall be based on hydraulic requirements. The capacity of a single catch basin can be calculated by the orifice equation:

$$Q = 0.67\ C\ A\ (2\ g\ h)^{0.5}$$

Where Q = inlet capacity (m^3/s)
0.67 = clogging factor
C = orifice coefficient (0.8)
A = open area (0.068 m^2 for Dobney B-23 grate)
g = gravitational acceleration (9.81 m/s^2)
h = depth of ponding (m)

The maximum spacing shall be established to permit each catch basin to drain a maximum area of 500 m2 on road grades up to 3% and 350 m2 on steeper grades. If the major flow is to be conveyed in the pipe system, additional catch basins are required.

The minimum size for catch basin leads is 200 mm for single catch basins and 250 mm for double catch basins. Catch basin leads should be taken directly into manholes if feasible. Double catch basins shall not be directly connected together; instead the lead from each catchbasin shall be connected to a wye and into the manhole. The minimum grade for leads is 1%. The maximum length is 30 m.

D7.11 Lawn Basins

Lawn basins shall be provided as per the requirements listed in the Section on Storm Water Management Plan. Lawn basin leads shall have a minimum size of 150 mm and a minimum slope of 1%. Where a lawn basin lead connects directly to a storm sewer instead of a manhole, an inspection chamber is required at the property line.

D7.12 Temporary Clean-Outs

Temporary clean-outs may be provided at terminal sections of a main provided that all the following conditions are met:

* future extension of the main is proposed or anticipated
* the length of sewer to the downstream manhole does not exceed 45 m
* the depth of the pipe does not exceed 2 m at the terminal point

NOTE: Clean-outs can not be considered permanent structures.

D7.13 Service Connections

Service connections shall be installed to provide a “gravity-flow” connection to all buildings fronting the main, except where the land can drain to an acceptable alternate existing system. Each storm sewer service connection shall have an inspection chamber at property line. The design requirements are:

a) The minimum diameters are 100 mm for residential and 150 mm for industrial/commercial.
b) The minimum slope from the main to the property line shall be 2% for 100 mm and 1.5% for 150 mm. All other sizes shall be based on minimum velocity of 0.75 m/s.

c) The connection shall be located at the lower (downstream) portion of a larger lot or land parcel. In urban developments, connections shall be as noted on the Standard Drawings.

d) The service connection at the property line shall be above the hydraulic grade line of the minor flow.

e) Each connection shall only service one single lot.

f) When the design proposes to infill an existing ditch, all existing service connections are to be connected to the proposed main.

g) A manhole shall be required on all service connections where the size of the connection is greater than 250 mm in diameter, unless the connection is more than two pipe sizes smaller than the main to which it is joining. A service connection exceeding 30 m in length will be treated as a regular main.

h) Inspection chamber at property line.

i) On service connections of 150 mm and smaller, a connection cannot be made to a manhole.

D7.14 French Drains

The use of french drains shall only be permitted where the topography and soil conditions are proven adequate to the acceptance of the Chief Administrative Officer or designate. A soils report will be required to support the design.

D8 MAJOR FLOW ROUTING AND FLOOD CONTROL

D8.1 Major Flow Routing

Unless the storm sewer system is oversized to accommodate the major flow (i.e. 1:100 year return frequency storm), provision for surface flow is required wherever the overland flow in excess of 0.05 m^3/s is anticipated. Major flow routing is generally accommodated along roadways, swales and watercourses. These designated flow paths shall be protected by restrictive covenants or rights-of-way and clearly identified in the stormwater management plan.

The quantity of flow to be conveyed by the surface flow path is the total major flow less the capacity of the minor system. The design of the major flow routing shall ensure to the satisfaction of the Chief Administrative Officer or designate that no endangering of public safety nor substantial property damages will occur under the major flow conditions.

D8.2 Roadway Surface Drainage

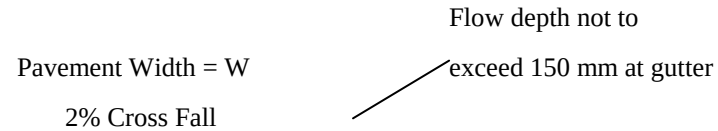
Roadways with barrier curbs and gutters can be designed as wide shallow channels to convey major surface flow. The required freeboard between the water elevation at maximum ponding/flow and the lowest minimum building elevation of the adjacent buildings is specified in Section D8.8. The maximum depths of flow shall not exceed 150 mm above the gutter line. Flow velocity greater than 2.5 m/s must be approved by the Chief Administrative Officer or designate. Refer to Table D2 for calculating the flow capacities for various road grades.

The Developer's Engineer shall consider the impact of surface routing on the major flow hydraulic grade line (HGL) of adjacent lateral roads. Existing lateral roads designed with the major HGL below surface may preclude using surface flow routing on the road under design.

The design of intersections shall ensure that the surface flow can continue along the designated path crossing over lateral streets. Similar considerations are required if a change of surface flow direction is required at an intersection.

ROAD SURFACE USED FOR MAJOR FLOOD ROUTING

TABLE D2



Flow Capacity	Q = A * V
Flow Velocity	V = (1 / n) * (A / P) ^ 0.667 * (S / 100) ^ 0.5
Flow Area	A = 0.15W - 0.005W ^ 2
Wetted Perimeter	P = 0.3 + W
Roughness Coeff	n = 0.013

Road Grade	W = 8.6 A = 0.920		W = 11 A = 1.045		W = 12.2 A = 1.086		W = 15 A = 1.125	
S %	V m/s	Q m^3/s	V m/s	Q m^3/s	V m/s	Q m^3/s	V m/s	Q m^3/s
0.50	1.197	1.101	1.111	1.161	1.066	1.158	0.954	1.073
0.60	1.311	1.206	1.218	1.273	1.168	1.268	1.045	1.176
0.70	1.416	1.303	1.315	1.374	1.261	1.369	1.129	1.270
0.80	1.514	1.393	1.406	1.469	1.349	1.465	1.207	1.358
0.90	1.606	1.478	1.491	1.558	1.430	1.553	1.280	1.440
1.00	1.693	1.558	1.572	1.643	1.508	1.638	1.349	1.518
1.10	1.776	1.634	1.649	1.723	1.581	1.717	1.415	1.592
1.20	1.855	1.707	1.722	1.799	1.652	1.794	1.478	1.663
1.30	1.930	1.776	1.792	1.873	1.719	1.867	1.538	1.730
1.40	2.003	1.843	1.860	1.944	1.784	1.937	1.596	1.796
1.50	2.074	1.908	1.925	2.012	1.847	2.006	1.652	1.859
1.60	2.142	1.971	1.988	2.077	1.907	2.071	1.706	1.919
1.70	2.207	2.030	2.049	2.141	1.966	2.135	1.759	1.979
1.80	2.271	2.089	2.109	2.204	2.023	2.197	1.810	2.036
1.90	2.334	2.147	2.167	2.265	2.078	2.257	1.859	2.091
2.00	2.394	2.202	2.223	2.323	2.132	2.315	1.908	2.147
2.10	2.453	2.257	2.278	2.381	2.185	2.373	1.955	2.199
2.20	2.511	2.310	2.331	2.436	2.236	2.428	2.001	2.251
2.30	2.568	2.363	2.384	2.491	2.287	2.484	2.046	2.302
2.40	2.623	2.413	2.435	2.545	2.336	2.537	2.090	2.351
2.50	2.677	2.463	2.485	2.597	2.384	2.589	2.133	2.400
2.60	2.730	2.512	2.534	2.648	2.431	2.640	2.175	2.447
2.70	2.782	2.559	2.583	2.699	2.477	2.690	2.217	2.494
2.80	2.833	2.606	2.630	2.748	2.523	2.740	2.257	2.539
2.90	2.883	2.652	2.677	2.797	2.568	2.789	2.297	2.584
3.00	2.932	2.697	2.722	2.844	2.611	2.836	2.336	2.628
3.10	2.981	2.743	2.767	2.892	2.655	2.883	2.375	2.672
3.20	3.029	2.787	2.812	2.939	2.697	2.929	2.413	2.715
3.30	3.076	2.830	2.855	2.983	2.739	2.975	2.450	2.756
3.40	3.122	2.872	2.898	3.028	2.780	3.019	2.487	2.798
3.50	3.167	2.914	2.941	3.073	2.821	3.064	2.524	2.840
3.60	3.212	2.955	2.982	3.116	2.861	3.107	2.559	2.879
3.70	3.257	2.996	3.023	3.159	2.900	3.149	2.595	2.919
3.80	3.300	3.036	3.064	3.202	2.939	3.192	2.630	2.959
3.90	3.343	3.076	3.104	3.244	2.977	3.233	2.664	2.997
4.00	3.386	3.115	3.144	3.285	3.015	3.274	2.698	3.035

Note: Shaded portion requires special approval

Road Surface Used for Major Flood Routing

D8.3 Ditches

Ditches are not acceptable for permanent servicing of land development projects in urban areas.

Ditches adjacent to roadways shall conform to the following criteria:

a)	maximum depth	1.0 m
b)	minimum bottom width	0.5 m
c)	maximum side slope	1.5(H):1(V)
d)	minimum grade	0.5%
e)	maximum velocity (Unlined ditch)	1.0 m/s

Where soil conditions are suitable or where erosion protection is provided, higher velocities may be permitted. If grades are excessive, erosion control structures or ditch enclosure may be required.

The minimum right-of-way width for a ditch shall be 5 m where the ditch crosses private property. The ditch shall be offset in the right-of-way to permit a 3 m wide access for maintenance vehicles. Additional right-of-way may be required to facilitate the ditch construction and access. The top of the ditch adjacent to the property line shall be a minimum 0.5 m away from that property line.

D8.4 Watercourses

Natural watercourses are integral components of the major drainage system and the ecological system. If the process of development or drainage design involves instream works, the Designer shall refer to the "Land Development Guidelines for the Protection of Aquatic Habitat" by Department of Fisheries and Oceans & BC Ministry of Environment, Lands and Parks.

All proposals for works affecting natural watercourses must be forwarded (by the Designer) to the following Federal and Provincial Government Agencies for review:

1. Department of Fisheries and Oceans (DFO)
   Habitat Management Unit

2. Ministry of Environment, Lands and Parks (MOELP)
   Fish and Wildlife Branch

3. Ministry of Environment, Lands and Parks (MOELP)
   Water Management Branch

D8.5 Culverts

Culverts located in natural watercourses or culverts crossing all roads shall be designed to convey the major flow or greater. The Designer shall determine whether the culvert will operate under inlet or outlet control at design conditions.

Concrete culverts are preferred for general uses. Corrugated steel culverts may be considered under special circumstances when their use can be justified. Any corrugated steel culverts conveying the major flow must be protreated as a minimum with asphalt coating on both sides.

The minimum diameter of culverts is 450 mm (300 mm for driveway culverts).

The average water velocity in culverts should not exceed:

* 1.2 m/s for lengths up to 24.4 m
* 0.9 m/s for lengths over 24.4 m
* for longer culverts within a fishery stream, special conditions from DFO and MOELP will apply.

The minimum depth of cover for culverts is 0.3 m, subject to the correct pipe loading criteria.

Inlet and outlet structures are required for all culverts designed for the major flow. Considerations for the installation of energy dissipation and erosion control shall be included in the design.

Driveway culverts that form part of the minor system shall have capacity for the runoff from the 1:5 year storm with the design headwater not to exceed the top of the culvert. All new driveway culverts shall be sized to ensure that there is no adverse impact on adjacent properties under the 1:100 year runoff conditions.

D8.6 Inlet and Outlet Structures

Refer to Standard Drawings for the design of inlet and outlet structures for pipes up to 1200 mm diameter. Pipes larger than 1200 mm diameter and non-circular culverts require specially designed inlet and outlet structures. Concrete block headwall may be used for culverts up to 750 mm diameter.

Outlets having discharge velocities in excess of 1 m/s require rip rap protection and/or energy dissipating structures for erosion control.

Grills are required at the inlets and outlets of all pipes over 450 mm in diameter and which exceed 30 m in length (except large culverts in major watercourses). Trash racks are required at the inlet of the pipes utilising the grills. Grills may also be required on smaller diameter storm sewers at the discretion of the Chief Administrative Officer or designate.

D8.7 Site and Lot Grading

Developments shall incorporate site and lot grading techniques. Unless otherwise noted, rural developments with lots 0.4 ha and over will not require stormwater management plans outlining the site and lot grading.

The following criteria shall be used:

a) Each lot should be graded to drain into a Municipal Drainage System or a natural drainage path independent of adjacent lots where possible. Minimum lot grades shall be 2%. Lot grading shall be uniform and consistent, and can be reduced to 1% if an individual 450 mm lawn basin is placed at the low side of the lot.

b) Areas around buildings (or proposed building sites) shall be graded away from the (proposed) foundations to prevent flooding.

c) Lots lower than adjacent roadways should be avoided where possible or acceptable storm water management techniques must be incorporated to direct the runoff to an existing or proposed drainage system. Proper flood proofing is required at the low points of roadways.

d) Existing or proposed buildings must be sited above the hydraulic grade line of the Major System. The Designer shall note any existing Minimum Building Elevations (MBE).

e) Individual lots will not be permitted to direct storm runoff into any natural watercourse, park or green belt areas. Only sheet flow may be permitted.

(f) A 600 mm lawn basin is to be placed at the end of every developer's swale.

(g) A builder's swale in the front yard requires a lawn basin to be installed prior to discharging onto the roadway or sidewalk.

NOTE: The Developer is advised that lot grading is considered an "essential service" and is required prior to the issuance of building permits. To facilitate Building Permit issuance, and to provide the builders with accurate site information, the submission and acceptance of the lot grading record drawings is required prior to issuance of the building permits.

D8.8 Minimum Building Elevations (MBE)

The MBE is defined as the elevation of the lowest floor slab in a building or the underside of the floor joists where the lowest floor is constructed over a crawlspace.

Crawlspace is a space between a floor and the underlying ground having a maximum height of 1.2 m to the underside of the joists and not used for the storage of goods or equipment damageable by floodwater.

The MBE shall be established at least 0.6 m above the service connection invert and 0.35 m above the 100 year hydraulic grade line elevation. In areas where the designer can prove that the 1:100 year runoff is confined within the roadway and isolated from the adjacent properties (i.e. no flow via driveway letdowns or storm connections into adjacent properties), the freeboard between the MBEs and the 1:100 year hydraulic grade line may be reduced to 0.2 m. Accepted MBEs may not be revised without referral to the Chief Administrative Officer or designate.

Unless otherwise required, rural and agricultural developments do not require MBEs for the proposed lots/parcels.

A gravity connection to the municipal storm drainage system may be made only where the habitable portion of a dwelling is above the Major System hydraulic grade line.

D8.9 Roof Drainage

a) Roof drainage downspouts shall be connected with the storm sewer system, except single family and low density multi-family residential buildings which shall have downspouts directed onto splash pads in a manner such that flows will be directed away from buildings.

D8.10 Swales

Swales shall be a maximum 150 mm deep and shall conform to Standard Drawings. All swales are to be lined with turf on a minimum 100 mm of topsoil. Swales required for lot grading conformity shall be located on a 3 m easement (Easement width may be reduced to 1.8 m where no drainage pipes are required) for accepting drainage from adjacent lots. Swales designed for Major Flow Routing may exceed the 150 mm depth to accommodate the anticipated flows with the easement established accordingly. Swales shall have a minimum 1 % grade.

D8.11 Siltation Controls

Designers are required to demonstrate how work will be undertaken and completed so as to prevent the release of silt, raw concrete, concrete leachate and other deleterious substances into any ditch, storm sewer, watercourse or ravine. Construction materials, excavation wastes, overburden soils, or other deleterious substances shall be disposed of or placed in such a manner as to prevent their entry into any watercourse, ravine, storm sewer system, or restrictive covenant area.

The Designer shall refer to the "Land Development Guidelines for the Protection of Aquatic Habitat" by DFO and MOELP and consult these agencies with regards to the required siltation controls. Details of the proposed controls are to be included in the design drawings and shall be the first constructed part of the works.

All siltation control devices shall be situated to provide ready access for cleaning and maintenance. Proposed siltation control structures must be maintained throughout the course of construction and to the end of the maintenance period (final acceptance) or until 90% of the lots have been built on, whichever occurs later. Changes in the design of the structure will be required if the proposed structure is found to be inadequate.

SECTION "S" - SANITARY SEWER

S1 SANITARY SEWER SYSTEMS

Sanitary sewer systems shall be designed in accordance with the requirements of the Ministry of Environment, Waste Management Branch, and the requirements noted in this Schedule.

S2 DESIGN FLOWS

Sanitary sewers shall be designed using the Peak Wet Weather Flow (PWWF). The PWWF is the sum of the Peak Dry Weather Flow (PDWF) and infiltration flow.

S2.1 Average Daily Flow (Dry Weather)

Residential	350	l/day/capita
Commercial	40,000	l/day/ha
Industrial	30,000	l/day/ha
Institutional	40,000	l/day/ha

If reliable information indicates that the non-residential flows will be greater than the above rates, the higher flows shall be used in the design analysis.

S2.2 Peak Dry Weather Flow (PDWF)

The Peak Dry Weather Flow shall be calculated by the following formula:

$$Q = \frac{q\ P\ PF}{86{,}400}$$

Where Q = Peak Dry Weather Flow (L/s)

q = Average Daily Flow (Dry Weather) (l/day/capita)
P = Population
PF = Harmon Peaking Factor:

$$PF = 1 + \frac{14}{4 + \sqrt{0.001xP}}$$

For calculating the peaking factor, non-residential areas shall be converted from hectares to capita using an equivalent population of 90 persons per ha.

S2.3 Infiltration Rate

An infiltration rate of 0.1 L/s/ha shall be added to the PDWF to determine the PWWF.

S3 PIPE FLOW FORMULAS

a) Gravity Sewers:

Manning's formula shall be used to size gravity sanitary sewers. Refer to Section on Sizing of Storm Sewers for the relevant formula and roughness coefficients.

Gravity sewers shall be sized such that the Peak Wet Weather Flow depth will not exceed 75% of the full depth of the pipe.

b) Force Mains:

Hazen-Williams formula shall be used:

$$Q = \frac{C\, D^{2.63}\, S^{0.54}}{278{,}780}$$

Where Q = rate of flow in L/s
D = internal pipe diameter in mm
S = slope of hydraulic grade line in m/m
C = friction coefficient = 100

S4 MANHOLES

Manholes shall be required at:

* all changes in grade

* all changes in direction
* all changes in pipe sizes
* all intersecting sewers
* all terminal sections
* downstream end of curvilinear sewers

Manholes shall be placed where future extensions are anticipated and shall be spaced no greater than 135 m apart. All sanitary manholes shall be pre-fabricated unless specifically approved by the CAO or designate.

Sanitary manhole rim elevations in off-road areas shall be designed to be:

a) above the adjacent storm manhole rim elevation

b) above the surrounding ground so that infiltration from ponding will not occur.

S5 HYDRAULIC LOSSES ACROSS MANHOLES

The following criteria shall be used:

a) The springline of the downstream pipe shall not be higher than that of the upstream pipe.

b) Minimum drop in invert levels across manholes:

(i)	Straight run	-	no drop required
(ii)	Deflections up to 45°	-	15 mm drop
(iii)	Deflections 45° to 90°	-	30 mm drop

c) Manhole drops shall be provided as follows:

Invert Difference	Use
Up to 0.25 m	Inside ramp
0.25 - 0.90 m	Outside ramp
Over 0.90 m	Outside drop.

See Standard Drawings for details of manhole drops. For incoming pipes 600 mm and larger in diameter, special drop design will be required.

S6 TEMPORARY CLEAN-OUTS

Temporary clean-outs may be provided at terminal sections of a main provided that:

a) future extension of the main is proposed or anticipated.

b) the length of sewer to the downstream manhole does not exceed 45 m.

c) the depth of the pipe does not exceed 2 m at the terminal point.

Note: Clean-outs shall not be considered a permanent structure.

S7 MINIMUM PIPE DIAMETER

The minimum size of pipe shall be 200 mm.

S8 VELOCITIES

The minimum velocity shall be 0.75 m/s. There is no maximum velocity. However, consideration must be given to scour problems where flow exceed 2.5 m/s, and anchoring should be incorporated where the grades of the sewer are 15% or greater.

S9 MINIMUM GRADE

The grade of any sewer is governed by the minimum velocity required.

S10 MINIMUM DEPTH OF COVER

The minimum cover over any main shall be 1.2 m. The depth of the sewer must be sufficient to provide gravity flow service connections to both sides of the roadway and must allow for future extensions to properly service all of the upstream tributary lands for ultimate development.

Where it is not feasible to service by gravity connection, a rear yard sewer may be required.

S11 CURVILINEAR SEWERS

Where permitted, horizontal curves will require a constant offset and shall be uniform throughout the curve. The radius of the curve shall not be less than 60 m. The design velocity must exceed 0.91 m/s. The minimum grade shall be 1% and each joint is to be located by survey. Refer to Section on Manholes for manhole location requirements.

All curvilinear sewers shall be video tested as directed by the Chief Administrative Officer or designate at the Developer’s expense to ensure proper grade and alignment.

S12 SEWER LOCATION/CORRIDORS

Sanitary sewers shall be located within the road right-of-way as noted in the applicable Standard Drawings for road cross-sections.

When the sewer is required to cross private lands, the right-of-way shall be a minimum of 3 m wide. Where both storm and sanitary sewers are in one right-of-way, the width shall be a minimum of 4.6 m wide.

When a sewer, manhole, valve chamber, or other appurtenances are located within a right-of-way, the Developer will, for maintenance purposes, be required to provide vehicular access from an existing Municipal road. The maintenance access shall be constructed to Municipal standards

adequate to support the maintenance vehicles for which the access is intended. Where an access is required, the access is to be located entirely on one lot.

S13 SERVICE CONNECTIONS

a) Service connections shall be provided to each lot fronting the main. All services shall enter the main at a point just above the springline.

b) Single connections only will be permitted.

c) Connections to new mains shall be made using wye fittings. Connections to existing mains shall be made using saddles.

d) The standard size for service connections shall be 100 mm.

e) The minimum grade of service connections from the main to the property line shall be 2% for 100 mm and 1.5% for 150 mm. All other sizes shall be based on minimum velocity of 0.75 m/s.

f) The minimum depth of a service at the property line shall be 1 m and the maximum depth of a service at the property line shall be 2 m unless otherwise accepted by the Chief Administrative Officer or designate.

g) Inspection chambers are required for all connections.

h) A manhole shall be required on all service connections where the size of the connection is greater than 250 mm in diameter, unless the connection is more than two pipe sizes smaller than the main to which it is joining. Service connection exceeding 30 m in length will be treated as a regular main.

S14 SANITARY PUMP STATIONS

If at all possible, the use of sanitary pump stations is to be discouraged. Any proposed use of pump stations must receive prior approval from the CAO or designate.

All sanitary pump station designs shall be carried out by the Municipality at the Developer's expense.

Any sanitary pump station must be located within a right-of-way outside the road dedication.

The size, capacity and type of these stations will be dependent upon the development and catchment area involved. Generally, the following criteria shall be considered in the design of submersible duplex pump systems:

a) All sanitary pump stations shall be designed with two pumps, each capable of handling the maximum flow conditions independent of the other. One pump shall be equipped with an automatic flush valve.

b) Each pump must be:
* capable of passing solids up to 75 mm in size
* equipped with hour meters
* easily removed for maintenance
* operate on a 347/600 volt electrical source (pump motors over 5 HP are to be 600 volt 3 phase type)
* able to operate alternately and independently of each other
* 208 volt 3 phase may be acceptable where no other voltage is available

c) Motor cables, power cables, etc. shall be continuous from within the pump station to within the kiosk. In no instance shall a cable be spliced. Only one cable is allowed in one conduit.

d) Separate level regulators are required as follows:
* low level alarm (dry contact in pump control for telemetry)
* pumps off
* lead pump start
* high intermediate alarm (dry contact in pump control for telemetry)
* lag pump start
* high level alarm (dry contact in pump control for telemetry).

In addition to the above noted alarms, the pump control shall contain dry contacts for the telemetry of Pump #1 and #2 fail, and Pump #1 and #2 run time and pump running indicator.

e) Level controls shall be either a ITT Flygt float level tree type (mercury) or Multi Trode system or an acceptable alternative. Guides must be used for all float levels.

f) All auxiliary equipment and control panels shall be mounted in a suitable kiosk adjacent to the station. The kiosk shall be located not less than 1.2 m and not more than 3 m from the station lid.

g) The control kiosk shall be designed to contain all control and telemetry equipment on the front panel and all power equipment on the rear panel. The concrete base for the kiosk shall be a minimum of 75 mm above finished grade.

h) The kiosk shall contain a separate compartment for:
* pump control
* service entrance
* fan and duct
* isolated cable junction chamber vented to the atmosphere.

i) All check valves shall be weight and lever type installed in the horizontal position.

j) All stations shall require an explosion-proof intake fan which can be activated by a manual switch, and be of sufficient capacity to exchange the total volume of air inside the station with fresh air within 3 minutes of activation.

k) The entrances to all stations must be waterproof and be provided with a suitable lock. The cover may be either aluminium or fibreglass. The entrance should be 200 mm above ground level where feasible but, in no case, more than 300 mm above the ground.

l) Access into the stations shall be by an aluminium ladder. The location of the ladder shall not interfere with the removal and installation of the pumps, etc. The ladder shall be designed to extend and lock at least 1 m above the station entrance. A platform is to be provided above the high water level float to permit wet well access wherever the total depth from ground level to wet well floor exceeds 2.4 m.

m) All wiring shall be explosion-proof, Class 1, Division 2, and electrical design and installation is subject to the acceptance of the Provincial Safety Inspector. Metal stations shall be protected by at least two 15 kg packaged magnesium anodes.

n) Each station shall provide a minimum of one day storage or alternatively an automatic generator for standby power in case of power failure, all as directed by the Chief Administrative Officer or designate. Provision for a telemetry system must be included for connection into the Municipality's Telemetry System.

o) All equipment must be CSA approved and have at least a one year guarantee for parts and labour. The supplier is to provide to the Municipality three sets of Operating and Maintenance Manuals. All pumps must be factory tested prior to installation.

p) A 50 mm water connection with standpipe for cleaning purposes must be provided to the site.

q) The roof and cover of the pump station should be designed to withstand an H20 loading unless adequate protection is provided.

r) The control panel must incorporate an extra plug-in, a Arktite receptacle and a transfer switch for a standby power source. Underground electrical wiring is required.

s) The area around the station and all associated equipment or building shall be asphalted and not exceed 3% cross fall. The size of the area to be determined by the requirements for maintenance and a minimum of 1.2 m clearance around structures.

t) A receptacle compatible with the Municipality's removable lifting arm shall be incorporated into the design of the pump station to facilitate the removal and installation of the pumps.

u) The interior surfaces of all steel and fibreglass stations shall receive at least two coats of two component white epoxy enamel.

v) The wet well bottom shall be benched to direct all solids into the pump suction. Wet wells must have at least a 1.2 m sump below the invert of the inlet pipe.

w) The pump control panel must incorporate the following indicator lamps:

Condition		Colour	Reset
Pump on	1 for each pump	Green	
Pump fail	1 for each pump	Red	Manual
Pump motor overload	1 for each pump	Red	Manual
Motor winding high temperature	1 for each pump	Red	Manual
Moisture sensor	1 for each pump	Red	Manual
Power failure		Red	Manual
High wet well level		Red	Manual
High intermediate wet well level		Red	Manual
Low wet well level		Red	Manual

All indicator lamps must be "push to test" type.

x) An hour meter must be built into the panel for each pump.

y) An ammeter must be provided for each pump, switchable to each phase for 3 phase systems.

z) A complete set of spare circuit cards are to be provided where modular card-type pump controllers are used.

S15 FORCE MAINS

In conjunction with sanitary pumping facilities, the following criteria shall be noted in the design of force main systems.

a) Velocity

At the lowest pump delivery rate anticipated to occur at least once per day, a cleansing velocity of at least 0.9 m/s should be maintained. Maximum velocity should not exceed 3.5 m/s.

b) Air Relief Valve

An automatic air relief valve shall be placed at high points in the force main to prevent air locking.

c) Termination

Force mains should enter the gravity sewer system at a point not more than 50 mm above the flow line of the receiving manhole. Manhole benching shall be a minimum of 200 mm higher than the crown of the force main. The flow shall be discharged straight into the outflow pipe with no bends in the manhole. If this is not possible, an additional discharge manhole shall be constructed which flows by gravity to the receiving system.

d) Size

The minimum size for force mains shall be 100 mm diameter.

e) Materials

The material selected for force mains shall meet the Municipal standards and shall adapt to local conditions, such as character of industrial wastes, soil characteristics, exceptionally heavy external loadings, abrasion and similar problems.

All force mains shall be designed to prevent damage from superimposed loads, or from water hammer or column separation phenomena.

SECTION "W" - WATER

W1 WATER DISTRIBUTION SYSTEM

W1.1 Community Water Supply

Water main design shall conform to the requirements of the Provincial Ministry of Health and this Schedule.

The system shall be designed to provide peak domestic requirements and also shall provide adequate flows for fire protection. The required flow shall be the sum of the maximum daily domestic flow plus the required fire flow.

W2 DOMESTIC DEMANDS

Average daily domestic flow	570	litres/capita/day
Peak Day Demand	1364	litres/capita/day
Peak Hour Demand	1700	litres/capita/day

Design populations used in calculating water demand shall be computed in accordance with the Municipality's population predictions or with the planned development in the area to be served, whichever is larger.

In the absence of any data on existing or proposed sites, the following design demands for Commercial and Industrial areas shall be used:

Average Flow (during an 8 hour day)	0.7	L/s/ha
Peak Day Demand	1.1	L/s/ha
Peak Hour Demand	2.0	L/s/ha

Hydraulic design computations shall be based on the Hazen-Williams formula:

$$Q = \frac{C\, D^{2.63}\, S^{0.54}}{278{,}780}$$

Where Q = Rate of flow in L/s
C = Roughness coefficient (minimum 110)
D = Internal pipe diameter in mm
S = Slope of hydraulic grade line in m/m

W3 FIRE FLOW DEMANDS

The requirements of this section are based on the publication "Water Supply for Public Fire Protection - A Guide to Recommended Practice 1991" published by Fire Underwriters Survey.

W3.1 The following are minimum Fire Flows for different types of developments where the development is not protected by automatic fire sprinklers:

Developments	Required Fire Flow	
Single Family Residential	60	L/s
Apartments, Townhouses	90	L/s
Commercial	150	L/s
Institutional	150	L/s
Industrial	225	L/s

W3.2 Where each existing and future building on a lot is or will be constructed with an automatic fire sprinkler system protecting the entire building, the minimum fire flow provided to that lot may be reduced to the greater of:

a) the minimum fire flow calculated in accordance with the Fire Underwriters Survey 1991 Guide allowing for automatic fire sprinklers, or

b) the minimum flow required to support the automatic fire sprinkler systems and all other water requirements for fire fighting purposes on the lot.

W3.3 Where a water main is extended, each existing lot along the extension must be serviced in accordance with W3.1 or, where applicable, W3.2 based on the type of development permitted by the current zoning on each lot.

W3.4 Notwithstanding W3.1, W3.2 and W3.3, each water main extension shall be sized in accordance with municipal requirements for its water main network as determined by the Chief Administrative Officer or designate taking into account both domestic and fire flow requirements for the area.

W4 WATER PRESSURES

Maximum allowable pressure	1035	kPa
Minimum pressure at Peak Hour Demand	300	kPa
Minimum pressure anywhere in system during design Fire Flow and Peak Day Demand	150	kPa

All service connections shall be protected by pressure reducing valves in the dwelling.

W5 HYDRAULIC NETWORKS

Where there is an existing hydraulic network in place, the Municipality will provide existing information for design calculations.

Designs shall accommodate the ultimate development projections using either the Peak Day Demand plus Fire Flow or the Peak Hour Demand, whichever has the greater effect on pressure and flow.

Depending on the complexity and extent of the proposed distribution system, the Municipality may require a hydraulic analysis design showing minimum flows and pressures.

Pipe segments shall not be designed to have velocities exceeding 1.5 m/s or head loss exceeding 1 m per 100 m of length under Peak Day or Peak Hour design conditions, whichever is the greater.

The maximum desirable length of any permanent non-interconnected water main shall be 150 m. Any main exceeding 150 m in length, unless it is a temporary situation, shall be looped, except with the approval of the Chief Administrative Officer or designate. The maximum length of a temporary non-interconnected water main, in the residential zone, shall be 150 m. A temporary non-interconnected water main is one that is reasonably expected to exist for a period of less than five years.

In residential areas, water mains servicing fire hydrants shall be 150 mm diameter or larger. Wherever practical, water mains shall be looped. Dead-end mains should not be promoted.

In commercial/industrial/institutional areas, the minimum water main size shall be 200 mm diameter.

W6 DEPTH OF COVER

The minimum cover over any water main shall be 1.0 m with 0.3 m cover over valve stems. Valves larger than 400 mm may be installed sideways with a 90° stem adapter.

Where it is impractical to provide the minimum cover required, precast concrete slabs shall be used to protect the water main against excessive loadings. The Developer's Engineer shall submit a design to show that the precast concrete slab is adequate for its intended purposes. Such slab shall be provided with lifting hooks for subsequent access to the water main.

No concrete encasing shall be allowed.

W7 WATER MAIN GRADES

The minimum grade for a main shall be 0.1%. The maximum grade shall be 8% unless provisions are made to anchor the pipe to the bottom of the trench with concrete poured in place.

W8 CLEARANCE WITH SEWER PIPES

All cross over points with sanitary or storm sewers shall be indicated on the drawings.

Where the water main is below or has less than 0.5 m clearance above any sewer, a next higher class of pipe shall be used and a full pipe length shall be centred across the cross over point.

The end joints of this pipe shall be wrapped with a petroleum tape product in accordance with the following standards:

ANSI/AWWA C214 (factory applied)
ANSI/AWWA C209 (field applied)
ANSI/AWWA C217 (petroleum tape)
All materials used are to have zero health hazard.

The minimum horizontal clearance between a water main and a sanitary or storm sewer shall be 3 m. Where it is impractical to provide this minimum clearance, all affected joints shall be similarly protected.

W9 VALVES

In general, valves shall be located as follows:

a) In intersections, in a cluster at the pipe intersection or at hydrant tees the minimum shall be:

   (i) 3 valves at "X" intersection
   (ii) 2 valves at "T" intersection

   so that specific sections of mains may be isolated.

b) Valves shall be provided in all legs of "X" or "T" intersections in industrial areas.

c) Spacing of valves in industrial areas shall isolate no more than 1 hydrant or 2 service connections.

d) Spacing of valves shall not be more than 200 m apart for single family residential areas or 150 m apart for commercial areas. All other zones shall require special designs.

e) Not more than 1 hydrant is to be isolated per valve.

Valves shall be the same diameter as the main up to 300 mm diameter. For mains larger than 300 mm in diameter, valves shall be no more than one diameter size smaller.

All direct bury mainline valves shall be resilient seat gate valves. Butterfly valves shall only be used in special circumstances where approved by the Chief Administrative Officer or designate and where gate valves are not practical. Valves larger than 400 mm shall be provided with bypass valves.

W10 HYDRANTS

Fire Hydrants shall be located in general at street intersections, and at a maximum spacing of 150 m in residential areas with no lot further than 75 m from a hydrant. In high density residential, commercial, and industrial areas, hydrants shall be located at a maximum of 75 m or as approved by the Chief Administrative Officer or designate.

In mid-block locations, fire hydrants shall be located at the property lines. It shall be the Consultants' responsibility to ensure the design and proposed locations of the fire hydrants will not conflict with existing or proposed street lights, power poles, driveways, kiosks and other structures.

Fire hydrants shall be painted with ___General Paint Marine Enamel Blue Base White Top__ or approved equal, applied by brush.

W11 AIR VALVES

Combination air valves shall be installed at the summit of all mains of 200 mm diameter and larger except where the difference in grade between the summit and valley is less than 600 mm.

Combination air valves shall be sized as follows:

Water Main Size	Valve Size
Up to 300 mm	25 mm
Up to 600 mm	50 mm
Larger mains	Special design

All air valves shall be installed off the travelled portion of the road.

W12 BLOW-OFFS

Blow-offs are required at the ends of all water mains and at system low points. Blow-offs for water mains larger than 200 mm shall require special design. A gate valve is required for temporary blow-offs.

W13 THRUST BLOCKING AND JOINT RESTRAINTS

Concrete thrust blocking shall be provided at valves, bends, tees, wyes, reducers, plugs, caps, and blow-offs. Thrust block sizes shall be indicated on the design drawings.

Joint restraining devices may be used with the approval of the Chief Administrative Officer or designate in cases where conventional thrust blocking is not feasible, or to augment conventional thrust blocking where the possibility of disturbance exists. Design plans shall identify the type of restraining device to be used and clearly show the minimum required restrained pipe length.

The Chief Administrative Officer or designate may limit the size and number of taps permitted on a restrained length of pipe.

W14 VALVE CHAMBER DRAINAGE

Chambers or manholes containing valves, blow-offs, meters, or other appurtenances shall not be connected directly to any sewer. Such chambers or manholes shall be drained to the ground surface where they are not subjected to flooding by surface water, or to absorption pits, subject to adequate soils conditions.

W15 SERVICE CONNECTIONS

Minimum 20 mm diameter service connections shall be required for all lots. These connections shall typically be located at the downhill side of the lot and the curb stop located at 300 mm from the property line, or the road right-of-way.

A corporation stop and a curb stop shall be installed for each connection 50 mm diameter in size or smaller.

Conditions for mandatory fire sprinkler systems may apply for certain buildings. Where required, a Professional Engineer with experience in sprinkler system design shall size each water service connection to accommodate the anticipated fire sprinkler installations. Designs are to conform with the National Fire Protection Association standards.

Water meters are required for all commercial and industrial developments. All connections over 50 mm require a water meter. The water bylaw specifies meter requirements or refer to water bylaw.

W16 WATER SYSTEM LOCATION/CORRIDORS

Water mains shall be located within the road right-of-way as noted in the applicable Standard Drawings for road cross-sections unless otherwise approved by the Chief Administrative Officer or designate.

When the water main is required to cross private lands, the right-of-way shall be a minimum of 3 m wide.

When a water main, manholes, valve chambers, or other appurtenances are located within the right-of-way, the Developer will, for maintenance purposes, be required to provide vehicular access from an existing Municipal road. The maintenance access shall be constructed as shown in Standard Drawing and be adequate to support the maintenance vehicles for which the access is intended. Where an access is required, the access is to be located entirely on one lot.

W17 GEOTECHNICAL INVESTIGATION

A geotechnical investigation for soil corrosiveness is to be carried out for all proposed ductile iron (DI) or steel pipes, and to specify any necessary corrosion protection.

SECTION "L" - STREET LIGHTING

L1 GENERAL

Design of street lighting systems shall be prepared by a Professional Engineer with street lighting design experience. A copy of the lighting calculations shall be submitted. The drawing is to note the types of refractors to be used.

L2 ILLUMINANCE AND CONFIGURATION

Street lighting shall be designed as per Table L1:

Road Class	*Land Use*	*Average Horiz Illumce lux*	*Uniformity*		*Average Veiling Illumce Cd/m²*	*Configuration*	
			Max Av:Min Ratio	*Max Max:Min Ratio*		*Mounting Height m*	*Location*
Arterial	Commercial	22	3 : 1	6 : 1	0.28	9	Staggered
	Residential	20	3 : 1	6 : 1	0.24	9	Staggered
	Industrial	13	3 : 1	6 : 1	0.24	9	Staggered
	Rural [1]	n/a	n/a	n/a	n/a	n/a	Hydro Pole
	Institutional [2]	20	3 : 1	6 : 1	0.24	9	Staggered
Collector	Commercial	13	3 : 1	6 : 1	0.20	9	Staggered
	Residential	10	3 : 1	6 : 1	0.18	9	One side
	Industrial	6.5	3 : 1	6 : 1	0.16	9	Staggered
	Rural [1]	n/a	n/a	n/a	n/a	n/a	Hydro Pole
	Institutional [2]	20	3 : 1	6 : 1	0.18	9	Staggered
Local	Residential	6	6 : 1	12 : 1	0.16	7.5	One side
	Industrial	6	6 : 1	12 : 1	0.16	7.5	Staggered
	Rural [1]	n/a	n/a	n/a	n/a	n/a	Hydro Pole
	Institutional [2]	10	3 : 1	6 : 1	0.18	7.5	One side

[1] At intersections, bus stops, cross walks or other public facilities as directed by the Chief Administrative Officer or designate. Where street lighting is being provided in rural developments, luminaires and poles shall meet Municipal standards.

[2] Public facilities (e.g. schools, recreational facilities, libraries, etc.)

STREET LIGHTING DESIGN CRITERIA
TABLE L1

a) Lighting design shall follow recommended practices provided in "Guide for the Design of Roadway Lighting" published by the Transport Association of Canada.

b) Lighting level at all major intersections shall be increased by 25% over that of the higher of the approach roads.

c) Luminaires shall be 150 W or 200 W High Pressure Sodium unless approved by the Chief Administrative Officer or designate.

d) All electrical power shall be rated for 120 volts unless connecting to an existing system having a non-standard power rating.

e) Street lights shall have polycarbonate lenses.

f) The make and model of the luminaire upon which the illumination levels were calculated shall be specified on the drawings.

g) Street lights shall be provided for walkways and lanes as and when directed by the Chief Administrative Officer or designate.

L3 LUMINAIRES AND POLES

All street lights shall have Cobra type luminaires mounted on davit poles (galvanized).

Post top luminaires may be permitted in lanes or walkways.

Luminaires and poles for special development areas or streetscape themes shall conform to the type and style approved by the Chief Administrative Officer or designate.

Where special street lights are installed, the developer shall supply to the Municipality one additional spare luminaire and pole for every ten such units installed.

L4 UNDERGROUND DUCTS

Underground wiring for street lighting shall be designed in accordance with the Canadian Electrical Code (Part 1) and all bulletins as issued by the BC Electrical Safety Branch, the Provincial Electrical Inspection amendments and any municipal codes or bylaws and other authorities having jurisdiction shall be followed.

The standard offset for the location of the underground streetlighting ducts in road rights-of-way shall conform to the applicable Standard Drawings for the road type.

The minimum depth for the underground ducts shall be 0.6 m in boulevards and 0.9 m below the finished grade of the roadway.
It is the designer's responsibility to ensure that the supply service to the street lighting system receives connection permit from BC Hydro, a copy of which shall be forwarded to the Municipality.

L5 CIRCUIT SIZE

Service bases shall service a maximum of 25 lights.

Roads having staggered lighting shall have separate circuits on either side of the road.

SECTION "T" - STREET TREE AND BOULEVARD PLANTING

T1 GENERAL

Design of street tree and boulevard planting shall be prepared by a Landscape Architect, registered with the British Columbia Society of Landscape Architects or a Landscape Designer.

T2 PLANTING REQUIREMENTS

Street trees of a species acceptable to the CAO or designate will be required in all new commercial, industrial and residential development. Boulevard plantings will be required in all boulevards where the boulevard is physically separated from the adjacent development by a solid landscape screen or fence.

T3 PLANT SPACINGS

Street trees shall be spaced from 9 m to 15 m apart depending on the species used in the design.

Boulevard plantings shall be designed to fill in as a mass planting within 3 years of installation. A maximum spacing at installation shall be 900 mm O.C. for #2 pot evergreen shrubs and 450 mm O.C. for 10 cm pot evergreen ground covers.

T4 MINIMUM TREE PLANTING CLEARANCES

Street trees in different road categories shall be planted at offsets shown in the Standard Drawings. In addition, street trees shall have a minimum distance from the following:

Lamp standards	6 m
Steel/wooden poles	3 m
Driveways	2 m
Catch basins	2 m
Manholes, valve boxes, services	1.2 m
Sewer services	1.5 m
Hydrants	2 m
Corners	in line with 8 m sight triangle

Utility planting strip area (area between sidewalk and curb):

Curb face	0.75	m
Edge of sidewalk	0.6	m

Boulevard planting area (area between combined curb/sidewalk and property line):

Curb face	2.65	m
Edge of sidewalk	1	m

T5 SPECIES SELECTION

Street tree and boulevard planting design shall blend with existing plantings. Changes if necessary should occur at intersections.

Street tree species selection will be made from the list of recommended street trees included in Appendix "G."

APPENDIX "C" - SUPPLEMENTARY DETAIL DRAWINGS

General Notes and Numbering Systems

The *Supplementary Detail Drawings* as contained in this Schedule are primarily concerned with clarifying the Design Criteria. Construction details and practices are specified in the *Standard Detail Drawings* in the *Master Municipal Construction Documents* (MMCD). The *Supplementary Detail Drawings* are supplemental to the *Standard Detail Drawings*. However, in case of conflict, the *Supplementary Detail Drawings* take precedence over the *Standard Detail Drawings*.

The *Standard Detail Drawing* numbers in the MMCD are prefixed by a single letter to indicate works or services. To avoid possible confusion, the *Supplementary Detail Drawing* numbers are further prefixed by "SD". The 2 numbering systems are summarised as follows:

	Supplementary Detail Drawings	Standard Detail Drawings in MMCD
General	SDG 1, 2, 3 ...	G1, 2, 3 ...
Road	SDR 1, 2, 3 ...	R1, 2, 3 ...
Drainage	SDD 1, 2, 3 ...	S1, 2, 3 ...
Sanitary Sewers	SDS 1, 2, 3 ...	S1, 2, 3 ...
Water	SDW 1, 2, 3 ...	W1, 2, 3 ...
Street Trees	SDT 1, 2, 3 ...	-
Concrete & Misc	-	C1, 2, 3 ...
Electrical	SDE 1, 2, 3 ...	E1, 2, 3 ...

GENERAL

SDG 1 - Additional Legend for Contract Drawings

SDG 2 - Typical Lot Service Connection

SDG 3 - Sample Service Record

SDG 5 - Typical Travelled Access in Right-of-Way

ROAD

SDR 1 - Typical Notes for Roadworks

SDR 2 - Urban Undivided Roads

SDR 3 - Urban Divided Roads

SDR 4 - Rural Roads

SDR 5 - Half Roads

SDR 6 - Lane

SDR 7 - Rural Cul-de-sac

SDR 8 - Urban Cul-de-sacs

SDR 9 - Islands in Residential Cul-de-sac

SDR 10 - Hammerhead Turnaround

SDR 11 - Typical Left Turn Lane

SDR 12 - Emergency Access

SDR 13 - Commercial and Industrial Property Vehicle Entrances

SDR 14 - Extruded Curb and Asphalt Sidewalk

SDR 15 - Concrete Walkway

SDR 16 - Temporary Urban Turnaround

DRAINAGE

SDD 1 - Manhole Frame and Cover

SDD 2 - Storm Flow Control Manhole

SDD 3 - Outlet Structure

SDD 5 - Swale

SDD 6 - French Drain

SDD 7 - Exfiltration Trench

SDD 8 - Rock Pit

SDD 9 - Drainage Drywell

SDD 10 - Drainage Drywell Installation

SANITARY SEWER

SDS 1 **Sanitary Flow Control Manhole**

WATER

SDW 1 - Rural Fire Hydrant Assembly

SDW 3 - Watermain Fitting Minimum Thrust Block Area

SDW 4 - Watermain Blow-Off

SDW 5 - Air and Vacuum Valve Chamber

STREET TREE AND BOULEVARD PLANTING

SDT 1 - Tree Planting Detail

SDT 2 - Minimum Tree Planting Distances

SDT 3 - Boulevard Planting Sequence - Slopes Under 1:4

SDT 4 - Boulevard Planting Sequence - Slopes Over 1:4

ELECTRICAL

SDE 1 - Concrete Base Index

SDE 2 - Standard Trapezoidal Concrete Base

SDE 3 - Ground Plate Installation

SDE 4 - Single Unit Davit Luminaire Pole

APPENDIX "D" - STANDARD FORMS

Following are the standard forms used for the District of Port Hardy in the administration of subdivision approvals.

F-1 PERMISSION TO CONSTRUCT

F-2 CERTIFICATE OF INSPECTION

F-3 CERTIFICATE OF SUBSTANTIAL COMPLETION

F-4 CERTIFICATE OF ACCEPTANCE

F-9 AGGREEMENT TO PAY NON-REFUNDABLE DEPOSIT

F-10 COST SHARING AGREEMENT

F-11 ABSTRACT FOR SERVICING AGREEMENT (INSURANCE COVERAGE)

F-12 DRAINAGE CERTIFICATE

F-13 PLANTING COMPLETION COVERAGE

F-14 PLANTING ACCEPTANCE COVERAGE

F-15 ENGINEERING UNDERTAKING

F-16 APPLICATION FOR PERMISSION TO CONSTRUCT WORKS WITHIN HIGHWAY RIGHT OF WAY FOR THE PURPOSE OF PROVIDING ACCESS TO A HIGHWAY

District of Port Hardy

PERMISSION TO CONSTRUCT

File No: _____

Authorisation to proceed with construction is hereby granted to:

NAME OF DEVELOPER: _____
ADDRESS: _____

For the works described generally as:

_____
_____
_____

Authorised Start Date: _____ Completion Date: _____

Authorised Hours of Work: From _____ hrs to _____ hrs
Monday to Saturday inclusive.

Check the following:

- ☐ Construction plans approved
- ☐ Certificates of insurance received
- ☐ Administration fee paid
- ☐ Security deposit paid
- ☐ Servicing Agreement completed, No. _____
- ☐ Latecomer Waiver/Agreement adopted

Developer's Engineer: _____
Contact: _____
Business Tel: _____

Special Conditions: _____
_____
_____

_____
CHIEF ADMINISTRATIVE OFFICER
Date: _____

cc: Contractor

***Standard Form* F-1**

District of Port Hardy

CERTIFICATE OF INSPECTION

I hereby certify that all engineering and construction services required under the Bylaws of the District of Port Hardy for the subdivision of:

LEGAL DESCRIPTION: _____
PROJECT No: _____

which services were approved for construction under drawing numbers:

Drawing No.	*Date*	*Drawing No.*	*Date*
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

have been inspected by or under the direction of:

_____
_____

I further certify that the “Record Drawings" hereby submitted represent the works and services as installed for the aforementioned subdivision. These works and services were installed with sufficient inspection to assure construction in substantial compliance with approved design drawings, in full compliance with the District of Port Hardy Bylaws and as required by the Engineer and Geoscientist Act Code of Ethics.

Professional Engineer responsible for design:

Signature: _____
Name: _____
Company: _____
Address: _____
_____
Date: _____

Engineer’s Seal

***Standard Form* F-2**

District of Port Hardy

CERTIFICATE OF SUBSTANTIAL COMPLETION

File No: _____

DEVELOPER: _____

CONTRACTOR: _____

PROJECT NO: _____

SERVICING AGREEMENT NO: _____

This certificate is issued pursuant to Section GR7.3 of Port Hardy Bylaw.

The MAINTENANCE PERIOD for the Works will begin on _____
The MAINTENANCE PERIOD for the Works will end on _____

The Certificate of Acceptance will be issued when all deficiencies have been cleared, the maintenance period expired, and the CAO or designate has been satisfied all conditions of the Servicing Agreement have been fulfilled.

This Certificate has been made to the best of the Chief Administrative Officer or designate's knowledge, information and belief. It does not constitute acceptance of any work not in accordance with the requirements of the Port Hardy Bylaw, and not listed as a deficiency herein, whether or not such defect(s) could have been observed or discovered during construction.

The following is a LIST OF DEFICIENCIES related to the Work:

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

_____
CHIEF ADMINISTRATIVE OFFICER

cc: Contractor

Date: _____

Standard Form **F-3**

District of Port Hardy

CERTIFICATE OF ACCEPTANCE

File No: _____

DEVELOPER: _____

CONTRACTOR: _____

PROJECT NO: _____

SERVICING AGREEMENT NO: _____

All deficiencies, defects or faults in the Work observed or discovered within the period preceding the date of this Certificate having been rectified, this Certificate is issued pursuant to the referenced Servicing Agreement.

This Certificate has been made to the best of the Director of Operational Service's knowledge, information and belief. It does not constitute acceptance of any work not in accordance with the requirements of the Servicing Agreement, whether or not such defect(s) could have been observed or discovered during construction.

_____
CHIEF ADMINISTRATIVE OFFICER

cc: Contractor

Date: _____

***Standard Form* F-4**

District of Port Hardy

AGREEMENT TO PAY NON-REFUNDABLE DEPOSIT

I, Name: _____
Address: _____
(Developer)

Agree to pay the amount of $ _____ as a non-refundable deposit towards the installation described as:

_____
_____

The payment is made for works and services required under the Bylaw which cannot be currently constructed as identified on the attached form identified as "Estimate of Non-refundable Deposit."

This payment is made as full compensation for the itemised works and services and fulfils all the requirements of the Bylaw.

FOR CORPORATE BODY	SIGNED, SEALED AND DELIVERED The Corporate Seal of _____ was hereunto affixed in the presence of: *Signature*: _____ *Title*: _____	)	SEAL
FOR PRIVATE INDIVIDUAL	SIGNED, SEALED AND DELIVERED by the above named in the presence of (witness): *Signature*: _____ *Name*: _____ *Address*: _____ _____ _____ _____	)	_____ *Owner's Signature*
FOR THE DISTRICT OF PORT HARDY	SIGNED, SEALED AND DELIVERED The Corporate Seal of the District of Port Hardy was hereunto affixed in the presence of *MAYOR*: _____ *CHIEF ADMINISTRATIVE OFFICER*: _____	)	SEAL

***Standard Form* F-9**

District of Port Hardy

COST SHARING AGREEMENT

Between: The District of Port Hardy (Municipality) and
Name: _____
Address: _____
(Developer)

The Municipality agrees to pay up to the amount of $ _____ towards the installation described as:
_____

1. It is agreed between the parties to this agreement that the above amount paid shall be full compensation for the excess capacity required by the Municipality and that all costs associated in any way whatsoever with this installation which are in excess of the above amount shall be the full responsibility of the Developer to pay.

2. It is further agreed that the above amount will be paid as follows:
   (a) Upon issuance of substantial completion $ _____
   (b) Upon receipt of all "Record Drawings" $ _____

3. It is agreed that it is the sole responsibility of the Developer to arrange for the design and installation of the works according to Municipal requirements.

FOR CORPORATE BODY	SIGNED, SEALED AND DELIVERED The Corporate Seal of _____ was hereunto affixed in the presence of: *Signature*: _____ *Title*: _____	))))))	SEAL
FOR PRIVATE INDIVIDUAL	SIGNED, SEALED AND DELIVERED by the above named in the presence of (witness): *Signature*: _____ *Name*: _____ *Address*: _____ _____ _____	))))))))	_____ *Owner's Signature*
FOR THE DISTRICT OF PORT HARDY	SIGNED, SEALED AND DELIVERED The Corporate Seal of the District of Port Hardy was hereunto affixed in the presence of *MAYOR*: _____ *CHIEF ADMINISTRATIVE OFFICER*: _____	))))))	SEAL

***Standard Form* F-10**

District of Port Hardy

INSURANCE CERTIFICATE

RE: DEVELOPER: _____

PROJECT No: _____

INSURANCE POLICY No: _____

Pursuant to Appendix "A" of the Bylaw, the Developer is required to obtain and maintain in force during the term of the Servicing Agreement, an insurance policy acceptable to the Municipality.

I hereby certify that the attached insurance policy provides insurance coverage as required pursuant to clauses 19 and 20 of the Servicing Agreement between the District of Port Hardy and the Developer and that the attached insurance policy is valid for the period of the Servicing Agreement (one year).

Certified by:

Authorised Insurance Agent: _____

Company: _____

Address: _____

See insurance requirements pursuant to clauses 19 and 20 of the Servicing Agreement on the reverse of this Certificate.

Standard Form **F-11(1)**

District of Port Hardy

CLAUSES 19 AND 20 AS ABSTRACTED FROM THE SERVICING AGREEMENT

INSURANCE BY OWNER

19. The Owner will at his sole expense throughout the currency of this Servicing Agreement carry Comprehensive Liability Insurance acceptable to the Municipality in the amount of at least three million dollars ($3,000,000) with insurance companies licensed to carry on business in the Province of British Columbia in partial discharge of its obligation under Clauses 18(a), (b), (c) and (d).

INSURANCE COVERAGE

20. The Owner covenants and agrees to provide the following insurance coverage and to provide the Municipality with a copy of the insurance policy prior to the commencement of any construction of the works:

(a) To protect the Owner and the Municipality against all claims arising out of:

(i) Death or injury to persons; and

(ii) Damage to, or loss of use of, any property of third persons, including without limiting the foregoing; the following classes of property: Real property, chattels, land, works, buildings, structures, wires, conduits, pipes, mains, shafts, sewers, tunnels and apparatus in connection therewith, even when the damage or loss of use is caused by vibration, moving, shoring, underpinning, raising, rebuilding or demolition of any building, structure or support, or by excavation, tunnelling or other work below the surface of the ground or water; and

(iii) Damage to or loss of any municipal buildings, structures, stores, equipment and materials included in or required for the carrying out of the Work.

(b) Every policy of insurance required will:

(i) Name “THE DISTRICT OF PORT HARDY ” as an additional insured; and

(ii) State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and

(iii) State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Municipality, delivered to The District of Port Hardy’s Chief Administrative Officer.

Standard Form **F-11(2)**

District of Port Hardy

DRAINAGE CERTIFICATE

RE: DEVELOPER: _____

PROJECT No: _____

I hereby certify that downstream drainage facilities for a distance of 1.5 km have been checked with respect to line, grade and size, and that the downstream facilities are capable of handling the projected increase in drainage created by this project, without causing any adverse effect to Municipal or private property.

Professional Engineer responsible for design:

Signature: _____

Name: _____

Company: _____

Address: _____

_____

Date: _____

Engineer's Seal

***Standard Form* F-12**

District of Port Hardy

PLANTING COMPLETION CERTIFICATE

File No: _____

DEVELOPER:_____

CONTRACTOR:_____

PROJECT NO:_____

SERVICING AGREEMENT NO: _____

The MAINTENANCE PERIOD for the Work will begin on _____

The MAINTENANCE PERIOD for the Work will end on _____

The Planting Acceptance Certificate will be issued when the maintenance period has expired, and the CAO or designate has been satisfied all conditions of the Servicing Agreement in respect to street tree and boulevard plantings have been fulfilled.

This Certificate has been made to the best of the CAO or designate's knowledge, information and belief. It does not constitute acceptance of any work not in accordance with the requirements of the Bylaw, and not listed as a deficiency, whether or not such defect(s) could have been observed or discovered during construction.

_____
CAO OR DESIGNATE

cc: Contractor

Date: _____

***Standard Form* F-13**

District of Port Hardy

PLANTING ACCEPTANCE CERTIFICATE

File No: _____

DEVELOPER:_____

CONTRACTOR:_____

PROJECT NO: _____

SERVICING AGREEMENT NO: _____

All maintenance requirements and plant replacements having been undertaken in respect of street tree and boulevard plantings. This Certificate is issued pursuant to the referenced Servicing Agreement.

This Certificate has been made to the best of the CAO or designate's knowledge, information and belief. It does not constitute acceptance of any work not in accordance with the requirements of the Servicing Agreement, whether or not such defect(s) could have been observed or discovered during construction.

_____
CAO OR DESIGNATE

cc: Contractor

Date: _____

***Standard Form* F-14**

District of Port Hardy

ENGINEER'S UNDERTAKING

TO: The District of Port Hardy
ATTN: Chief Administrative Officer

DATE: _____
PROJECT No: _____
CONSULTANT FILE No: _____

We/I, _____, confirm that we/I have been retained by
(Developer's Engineer)

_____ for Development Project No. _____
(Developer)

to carry out construction survey, required design revisions, construction inspections, project supervision, field co-ordination, preparation of as-built drawings and certification of as-built drawings within 60 days of substantial completion inspection. The professional services provided during construction will assure that all construction is in substantial compliance with the accepted design drawings prepared by

_____
(Design Engineer)

and dated _____and in full compliance with the District of Port Hardy
(Date)

Bylaw. We/I will also undertake quality management services on the subject project as required by the Engineers and Geoscientists Act' Code of Ethics Section 14a.

Developer's Engineer:

Signature: _____

Name: _____

Company: _____

Address: _____

_____

_____

Engineer's Seal

***Standard Form* F-15**

APPENDIX "E" - SERVICE LEVELS

UTILITY	SERVICE	SERVICE LEVEL AREA					
		Urban Res	Rural Res	Ind/Com Urban	Ind/Com Rural	Marine Urban	Marine Rural
		A	B	C	D	E	F
Highways (Road Standards)	Rural		●		●		
	Urban	●		●		●	
Water	Community Water System	●		●		●	
Sanitary	Community Sewer System	●	●	●	●	●	●
	Open Channel System		●		●		●
Storm	Community Storm Sewer System	●		●		●	
	Ground Discharge		●		●		
Hydro *	Overhead Distribution		●		●		●
	Underground Distribution	●		●		●	
	Overhead Service		●		●		●
	Underground Service	●		●		●	
Street Lighting	Ornamental Street Lighting	●		●		●	
	Pole Mount Street Lighting		●		●		●
Telephone	Overhead Distribution		●		●		●
	Underground Distribution	●		●		●	
Sidewalk	One Side (Limited Local)	●		●		●	
	Two Sides (Local/Collector/Arterial)	●		●		●	
Street Tree and Boulevard Planting	Street Trees	●		●		●	

* Overhead distribution permitted on existing streets with existing overhead distribution.

APPENDIX "F" - SERVICING AGREEMENT

DISTRICT OF PORT HARDY

Servicing Agreement with No Street Trees

S E R V I C I N G A G R E E M E N T

No. _____

between

THE DISTRICT OF PORT HARDY

and

_____

NO STREET TREES

THIS AGREEMENT made this _____ day of _____ , 19___;

BETWEEN: THE DISTRICT OF PORT HARDY, a District Municipality incorporated under the Municipal Act of the Province of British Columbia, and having its Municipal Offices at _____, British Columbia, (hereinafter called the Municipality)

OF THE FIRST PART

AND: _____

(hereinafter called the Owner)

OF THE SECOND PART

WHEREAS:

A. The Owner holds an interest in lands and premises within the District of Port Hardy, in the Province of British Columbia, more particularly known and described as follows:

_____
_____
_____

(hereinafter called the Lands)

B. The Owner desires to subdivide the Lands or develop on the Lands.

C. The Approving Officer or the Municipality has agreed to approve the subdivision of the Lands or the Development respectively subject to the terms and conditions contained in this Contract, and the posting with the Municipality of the security deposit described herein.

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the promises, covenants and agreements hereinafter set forth, the parties hereto covenant, agree, represent and promise as follows:

APPENDICES

1. The following Appendices will be read with and form part of this Agreement:

   Appendix "A" - A copy of the subdivision plan of the Lands;

   Appendix "B" - A list of the Works and an estimate of their respective construction costs.

   Appendix "C" - Construction drawings to be used for the construction of the Works.

   Appendix "D" - Standard Forms.

OWNER TO DO WORK

2. The Owner covenants and agrees to construct and provide all the Works and Services listed and shown on Appendices "A", "B", "C" and "D" hereto, as approved by the Municipality, in accordance with the standards contained in Schedule "B" of the Municipality's Bylaw.

TRANSFER OF INTEREST IN WORKS

3. The Owner covenants and agrees with the Municipality to assign, transfer and convey to the Municipality all of its right, title and interest in the Works on any and all of the Lands, upon or in which the Works are situated, upon the completion of the Works, (as witnessed by the issuance of a Certificate of Substantial Completion). The Owner will from time to time and at all times so long as it exercises any rights of ownership in the said Lands upon the request of the Municipality, make, do and execute or cause or procure to be made, done and executed, all such further acts, deeds, rights-of-way, easements and assurances for the more effectual carrying out of this Agreement.

PERMISSION TO DO WORK

4. The Municipality covenants and agrees to permit the Owner to construct the Works, including that portion of the Works to be constructed on dedicated highways controlled by the Municipality; on the terms and conditions herein, and in the manner required by and at the places specified in the Plans and Specifications; provided that nothing in this Agreement shall be construed as an undertaking, promise or covenant on the part of the Municipality to make available the use of or access to the Works for any purpose, and without limiting the foregoing, for the purpose of serving the Lands or any other real property whatsoever either owned or controlled by the Owner or its associates or otherwise, but rather the Municipality reserves the right in its sole and absolute discretion to make available, operate, alter, use, extend, diminish, discontinue, tear up, sell, rent or otherwise dispose of the Works as its Council from time to time deems fit.

CHANGES TO BYLAWS

5. The Owner covenants and agrees to comply with any changes in subdivision requirements or standards enacted by Bylaw prior to the actual commencement upon the Lands of the Works contemplated by this Agreement.

LOT GRADING

6. The Owner covenants and agrees to adhere in all respects to the contours, elevations and drainage patterns indicated on the lot grading plan or storm water management plans prepared by the Engineer and/or Engineering Company indicated in Clause 11 hereof, and which are attached as Appendix “C” to this Agreement.

START OF WORK

7. The Owner covenants and agrees not to commence work until the CAO or designate provides the Owner with written permission to proceed with construction in the form provided in Appendix “D” of the Bylaw.

COMPLETION OF WORK

8. The Owner shall complete the construction of the Works, specified in Appendix “C” as Project No. _____ of the Municipality to the satisfaction of the Municipality, within one (1) year from the date of this Agreement.

OWNER TO GRANT RIGHTS-OF-WAY

9. The Owner to grant to the Municipality all necessary road dedications, statutory rights-of-way and easements over the said Lands to accommodate the said Works and, where the said Works are located upon or under privately owned lands other than the said Lands, to obtain at the Owner's expense, all necessary road dedications, statutory rights-of-way and easements over such Lands, in favour of the Municipality where applicable, to accommodate the said Works.

DESIGN BY P. ENG.

10. The Owner covenants and agrees that all Works required herein shall be designed by a Professional Engineer, who shall be registered with the Association of Professional Engineers and Geoscientists of British Columbia and retained by the Owner. Plans and specifications for the said Works shall be prepared by or under the direct supervision of the said Professional Engineer and all plans shall bear his professional seal and signature.

The Owner covenants and agrees to ensure that his Engineer (as specified in Clause 11) maintains professional liability, and errors and omissions insurance to a value of $250,000 per occurrence during the term of his engagement.

The Owner covenants and agrees to retain the Design Engineer during the construction period for the purposes of inspection to ensure compliance with the approved design and to provide certification of the as-built records.

ENGINEERING DRAWINGS

11. The Owner covenants and agrees that the intent of this Agreement is that the Owner shall construct fully completed Works, and grant all necessary easements as shown in the plans and specifications prepared by:

_____

under Drawing Nos.:

_____ _____
_____ _____
_____ _____

and as received for the purposes of this Agreement by the Engineering Department of the Municipality on the _____ day of _____ , 19___.

CHANGES TO DESIGN BY DISTRICT

12. The CAO or designate may alter the plans, because of conditions at the site, so that the Works function and operate in a manner satisfactory to the CAO or designate. Should the Works, as provided herein, prove to be in any way defective or should they not operate to the satisfaction of the CAO or designate, then the Owner shall, at his own expense modify and reconstruct the Works so that the Works shall be fully operative and function to the satisfaction of the CAO or designate.

SUBSTANTIAL COMPLETION

13. A Certificate of Substantial Completion shall be provided by the Approving Officer on the completion of the construction listing all the deficiencies. This letter of Substantial Completion shall not be construed as acceptance of the Works.

"AS-BUILT" SUBMISSION

14. The Owner covenants and agrees to submit to the Municipality the final "as-built" drawings and records of construction, and test results, as accepted by the CAO or designate, pursuant to Appendix "A" of the Bylaw, within 60 days of the date of the Letter of Substantial Completion.

MAINTENANCE PERIOD AND RESPONSIBILITY

15. The Owner covenants and agrees to maintain every part of the Works in perfect order and in complete repair for a period of one year from the date shown on the Certificate of Substantial Completion in accordance with the requirements of the Bylaw.

Should the Owner, for any reason, fail to maintain when ordered, then the Approving Officer, at his option, after giving the Owner seven days written notice (emergencies excepted), may do so, and the whole costs, charges and expenses so incurred by the Municipality will be payable by the Owner, as provided for herein. The decision of the Approving Officer will be final with respect to the necessity for repairs, or the adequacy of any work done.

Once any watermains covered by this Agreement are connected to the Municipal water system, only Municipal crews or contractors under the direct supervision of the Municipality may undertake work on such watermains. As such, Municipal crews or contractors retained by the Municipality will correct any defects, imperfections, acts of vandalism, settlements and/or rechlorination and flushing on such watermains which is deemed by the CAO or designate to be necessary during the one year period from the date shown on the Certificate of Substantial Completion and the whole of such costs, charges and expenses so incurred by the Municipality in undertaking such work including but not limited to

contractor costs will be payable by the Owner as provided for herein. Any rechlorination and flushing work on any watermain will be considered to be "emergency" work and as such the Owner may not receive prior notice that such work is being undertaken by the Municipality.

CERTIFICATE OF ACCEPTANCE

16. The Municipality covenants and agrees that upon satisfactory completion by the Owner of all of the covenants and conditions in this Agreement, including the maintenance of the Works in complete repair for a period of one (l) year, to provide the Owner with a Certificate of Acceptance of the Works, signed by the CAO or designate. Notice of acceptance of the Works will be issued by the CAO or designate when all deficiencies have been corrected, as-built drawings and service record cards received, and the maintenance period outlined herein has expired.

The Certificate of Acceptance will be in the form outlined in Appendix "D" to the Bylaw. All such Works and Services remain at the risk of the Owner until the Certificate of Acceptance for the Works has been issued.

FINAL BUILDING INSPECTION WITHHELD

17. The Owner covenants and agrees that the Municipality will withhold the granting of a Final Inspection for the use of any building or part thereof, constructed upon the Lands until all the essential services herein have been completed to the satisfaction of the Approving Officer.

OWNER INDEMNIFIES MUNICIPALITY

18. The Owner covenants and agrees to save harmless and effectually indemnify the Municipality against:

(a) all actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever brought by reason of the construction, installation, maintenance or repair of the Works;

(b) all expenses and costs which may be incurred by reason of the construction, installation, maintenance or repair of the Works resulting in damage to any property owned in whole or in part by the Municipality for which the Municipality by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, install, maintain or repair;

(c) all expenses and costs which may be incurred by reason of liens for non-payment of labour or materials, Workmen's Compensation, Unemployment Insurance, Federal or Provincial tax, check-off or encroachments owing to mistakes in survey;

(d) all expenses and costs which may be incurred by the Municipality as a result of faulty workmanship and defective material in any of the Works installed by the Owner.

The above clauses shall not be construed as to extinguish any rights which the Municipality would have were it not for the inclusion of Clause 18 in this Agreement.

INSURANCE BY OWNER

19. The Owner will at his sole expense throughout the currency of this Servicing Agreement carry Comprehensive Liability Insurance acceptable to the Municipality in the amount of at least three million dollars ($3,000,000.00) with insurance companies licensed to carry on business in the Province of British Columbia in partial discharge of its obligation under Clauses 18(a), (b), (c) and (d).

INSURANCE COVERAGE

20. The Owner covenants and agrees to provide the following insurance coverage, and to provide the Municipality with a copy of the insurance policy prior to the commencement of any construction of the Works:

(a) To protect the Owner and the Municipality against all claims arising out of:

(i) Death or injury to persons; and

(ii) Damage to, or loss of use of, any property of third persons, including without limiting the foregoing, the following classes of property: real property, chattels, land, works, buildings, structures, wires, conduits, pipes, mains, shafts, sewers, tunnels, and apparatus in connection therewith, even when the damage or loss of use is caused by vibration, moving, shoring, underpinning, raising, rebuilding or demolition of any building, structure or support, or by excavation, tunnelling or other work below the surface of the ground or water; and

(iii) Damage to or loss of any Municipal buildings, structures, stores, equipment and materials included in or required for the carrying out of the “Works.”

(b) Every policy of insurance required will:

(i) Name “THE DISTRICT OF PORT HARDY” as an additional insured; and

(ii) State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and

(iii) State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Municipality, delivered to The District of Port Hardy's CAO or designate.

SECURITY DEPOSIT

21. As security for the due performance of all of the covenants and promises contained in this Agreement the Owner has forthwith deposited with the Municipality a security deposit in the amount of $ _____, in the form of cash or a Letter of Credit acceptable to the Municipality (herein called the Security Deposit).

FORFEIT OF SECURITY DEPOSIT

22. In the event that the Owner fails to construct and install the Works and Services prescribed herein within the time specified in Clause 8, the said Security Deposit of $ _____ will be forfeited to the Municipality.

USE OF SECURITY

23. The Owner agrees that if all the Works or obligations are not completed, installed or performed pursuant to this Agreement, the Municipality may complete or fulfil the Works or obligations at the cost of the Owner and deduct from the Security Deposit held by the Municipality the cost of such completion, and the balance of the deposit shall be returned to the Owner, less any additional administration fees or costs incurred. If there is insufficient money on deposit with the Municipality then the Owner will pay such deficiency to the Municipality immediately upon receipt of the Municipality's bill for completion. It is understood that the Municipality may do such Works either by itself or by Contractors employed by the Municipality. If the Works are completed as herein provided, then the deposit shall be returned to the depositor.

RELEASE OF SECURITY

24. If the Approving Officer is of the opinion that the Works or any portion thereof have been adequately completed, and the Owner's covenants performed in compliance with this Agreement, and if there is no litigation pending or threatened by any third party against the Municipality as a result of, or arising from, the construction of the Works, the CAO or designate may return all, or any portion of the Security Deposit to the Owner at such times and in such amounts as he may deem proper, provided only that he will retain an amount equal to l5% of the Security Deposit, with a minimum of $1,000 and a maximum of $20,000,

to secure the performance of the maintenance required of the Owner (hereinafter called the Maintenance Deposit).

RETURN OF MAINTENANCE SECURITY

25. If the Approving Officer is satisfied that the Owner has complied with the covenants contained in this agreement and if there is no litigation pending or threatened by any third party against the Municipality as a result of, or arising from, the construction of the Works, the CAO or designate may direct that the Maintenance Deposit be returned to the Owner and thereinafter the Owner's responsibility for the Works shall cease.

ADMINISTRATION FEE

26. The Owner covenants and agrees to pay to the Municipality a non-refundable fee in the amount of $ _____ to cover Municipal administration and processing costs. These fees are payable prior to the signing of this Agreement or the commencement of construction of the works.

NO OTHER REPRESENTATIONS

27. It is understood and agreed that the Municipality has made no representations, covenants, warranties, guarantees, promises or agreements (verbal or otherwise) with the Developer other than those in this agreement.

COMPLIANCE WITH BYLAWS

28. Subject to this Agreement, the within Works and the development herein shall comply with all of the Bylaws of The District of Port Hardy.

NO WAIVER

29. The Owner covenants and agrees that nothing contained or implied herein shall prejudice or affect the rights and powers of the Municipality in the exercise of its functions under any public and private statutes, bylaws, orders and regulations, all of which may be fully and effectively exercised in relation to the said Lands as if the Agreement had not been executed and delivered by the Owner.

MUNICIPAL

30. The Owner covenants and agrees to pay the Municipality any CHARGES and

all costs and expenses which the Municipality has incurred in constructing watermain tie-ins, utility connections and any other work undertaken by the Municipality on behalf of the Owner. The payment for such work shall be made by the Owner within 30 days of the date of the invoice, mailed to

the Owner by the Municipality. Upon receiving payment and upon request of the Owner, the Municipality shall reduce the letter of credit for the invoiced amount. Should payment not be received by the Municipality within 30 days of the date on the Municipality's invoice to the Owner, the Municipality shall draw the invoiced amount from the security deposit posted by the Owner.

PATENTS AND COPYRIGHTS

31. The Developer shall pay all royalties, patent and license fees and hold and save the Municipality, its officers, agents, servants and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, articles, or appliances manufactured or used in the execution of the work, including their use by the Municipality, and if the Developer shall fail to save the Municipality, its officers, agents, servants and employees in manner aforesaid any monies collected from the Municipality, its officers, agents, servants and employees by reason of such failure shall be recoverable form the Developer.

WHENEVER the word "will" is used in this Agreement it will be construed as imperative (mandatory).

WHENEVER the singular or the masculine is used in the Agreement it will be construed as meaning the plural or the feminine or body corporate or politic where the context or the parties hereto so require.

THIS CONTRACT shall enure to the benefit of and be binding upon the parties hereto, their respective successors and assigns.

IN WITNESS WHEREOF the parties hereto have executed this contract the day and year first above written.

FOR CORPORATE BODY	SIGNED, SEALED AND DELIVERED The Corporate Seal of: _____ was hereunto affixed in the presence of: *Signature* _____ *Name* _____ *Title* _____	)	SEAL
FOR PRIVATE INDIVIDUAL	SIGNED, SEALED AND DELIVERED by the above named in the presence of (witness): *Signature* _____ *Name* _____ *Occupation* _____ *Address* _____ _____ _____	)	_____ *Owner' Signature*
FOR THE DISTRICT OF PORT HARDY	SIGNED, SEALED AND DELIVERED The Corporate Seal of the District of Port Hardy was hereunto affixed in the presence of: _____ Mayor _____ Chief Administrative Officer	)	SEAL

THE DISTRICT OF PORT HARDY

Servicing Agreement with Street Trees

S E R V I C I N G A G R E E M E N T

No. _____

between

THE DISTRICT OF PORT HARDY

and

_____

WITH STREET TREES

THIS AGREEMENT made this _____ day of _____ , 19___;

BETWEEN: THE DISTRICT OF PORT HARDY, a District Municipality incorporated under the Municipal Act of the Province of British Columbia, and having its Municipal Offices at _____, British Columbia, (hereinafter called the Municipality)

OF THE FIRST PART

AND: _____

(hereinafter called the Owner)

OF THE SECOND PART

WHEREAS:

A. The Owner holds an interest in lands and premises within the District of Port Hardy, in the Province of British Columbia, more particularly known and described as follows:

_____
_____
_____

(hereinafter called the Lands)

B. The Owner desires to subdivide the Lands or develop on the Lands.

C. The Approving Officer or the Municipality has agreed to approve the subdivision of the Lands or the Development respectively subject to the terms and conditions contained in this Contract, and the posting with the Municipality of the security deposit described herein.

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the promises, covenants and agreements hereinafter set forth, the parties hereto covenant, agree, represent and promise as follows:

APPENDICES

1. The following Appendices will be read with and form part of this Agreement:

Appendix "A" - A copy of the subdivision plan of the Lands;

Appendix "B" - A list of the Works and an estimate of their respective construction costs.

Appendix "C" - Construction drawings to be used for the construction of the Works.

Appendix "D" - Standard Forms.

OWNER TO DO WORK

2. The Owner covenants and agrees to construct and provide all the Works and Services listed and shown on Appendices "A", "B", "C" and "D" hereto, as approved by the Municipality, in accordance with the standards contained in Schedule "A" of the Municipality's Bylaws.

The Owner covenants and agrees to construct and provide all the Works and Services listed and shown on Appendices "A", "B", "C" and "D" hereto, as approved by the Municipality, in accordance with the standards contained in Schedule "A" of the Municipality's Bylaws.

TRANSFER OF INTEREST IN WORKS

3. The Owner covenants and agrees with the Municipality to assign, transfer and convey to the Municipality all of its right, title and interest in the Works on any and all of the Lands, upon or in which the Works are situated, upon the completion of the Works, (as witnessed by the issuance of a Certificate of Substantial Completion). The Owner will from time to time and at all times so long as it exercises any rights of ownership in the said Lands upon the request of the Municipality, make, do and execute or cause or procure to be made, done and executed, all such further acts, deeds, rights-of-way, easements and assurances for the more effectual carrying out of this Agreement.

PERMISSION TO DO WORK

4. The Municipality covenants and agrees to permit the Owner to construct the Works, including that portion of the Works to be constructed on dedicated highways controlled by the Municipality; on the terms and conditions herein, and in the manner required by and at the places specified in the Plans and Specifications; provided that nothing in this Agreement shall be construed as an undertaking, promise or covenant on the part of the Municipality to make available the use of or access to the Works for any purpose, and without limiting the foregoing, for the purpose of serving the Lands or any other real property whatsoever either owned or controlled by the Owner or its associates or otherwise, but rather the Municipality reserves the right in its sole and absolute discretion to make available, operate, alter, use, extend, diminish, discontinue, tear up, sell, rent or otherwise dispose of the Works as its Council from time to time deems fit.

CHANGES TO BYLAWS

5. The Owner covenants and agrees to comply with any changes in subdivision requirements or standards enacted by Bylaw prior to the actual commencement upon the Lands of the Works contemplated by this Agreement.

LOT GRADING

6. The Owner covenants and agrees to adhere in all respects to the contours, elevations and drainage patterns indicated on the lot grading plan or storm water management plans prepared by the Engineer and/or Engineering Company indicated in Clause 11 hereof, and which are attached as Appendix "C" to this Agreement.

START OF WORK

7. The Owner covenants and agrees not to commence work until the CAO or designate provides the Owner with written permission to proceed with construction in the form provided in Appendix "D" to the Bylaw.

COMPLETION OF WORK

8. The Owner shall complete the construction of the Works, specified in Appendix "C" as Project No. _____ of the Municipality to the satisfaction of the Municipality, within one (1) year from the date of this Agreement.

OWNER TO GRANT RIGHTS-OF-WAY

9. The Owner to grant to the Municipality all necessary road dedications, statutory rights-of-way and easements over the said Lands to accommodate the said Works and, where the said

Works are located upon or under privately owned lands other than the said Lands, to obtain at the Owner's expense, all necessary road dedications, statutory rights-of-way and easements over such Lands, in favour of the Municipality where applicable, to accommodate the said Works.

The Owner to grant to the Municipality all necessary road dedications, statutory rights-of-way and easements over the said Lands to accommodate the said Works and, where the said Works are located upon or under privately owned lands other than the said Lands, to obtain at the Owner's expense, all necessary road dedications, statutory rights-of-way and easements over such Lands, in favour of the Municipality where applicable, to accommodate the said Works.

DESIGN BY P.ENG

10. The Owner covenants and agrees that all Works required herein, except for street tree and boulevard plantings, development fence and fence inset plantings, shall be designed by a Professional Engineer, who shall be registered with the Association of Professional Engineers and Geoscientists of British Columbia and retained by the Owner. Plans and specifications for the said Works shall be prepared by or under the direct supervision of the said Professional Engineer and all plans shall bear his professional seal and signature.

The Owner covenants and agrees that all Works required herein, except for street tree and boulevard plantings, development fence and fence inset plantings, shall be designed by a Professional Engineer, who shall be registered with the Association of Professional Engineers and Geoscientists of British Columbia and retained by the Owner. Plans and specifications for the said Works shall be prepared by or under the direct supervision of the said Professional Engineer and all plans shall bear his professional seal and signature.

DESIGN BY LANDSCAPE ARCHITECT

The Owner covenants and agrees that all street tree and boulevard plantings, development fence and fence inset plantings, shall be designed by a Landscape Architect who shall be registered with the British Columbia Society of Landscape Architects or by a Landscape Designer. Plans and specifications for street tree and boulevard plantings, development fence and

fence inset plantings, shall be prepared by or under the direct supervision of the said Landscape Architect or Landscape Designer and all plans shall bear his professional seal and/or signature.

The Owner covenants and agrees to ensure that his Engineer (as specified in Clause 11) maintains professional liability, and errors and omissions insurance to a value of $250,000 per occurrence during the term of his engagement.

The Owner covenants and agrees to retain the Design Engineer during the construction period for the purposes of inspection to ensure compliance with the approved design and to provide certification of the as-built records.

ENGINEERING DRAWINGS

11. The Owner covenants and agrees that the intent of this Agreement is that the Owner shall construct fully completed Works, and grant all necessary easements as shown in the plans and specifications prepared by:

_____

under Drawing Nos.:

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

and as received for the purposes of this Agreement by the Engineering Department of the Municipality on the _____ day of _____ , 19___.

CHANGES TO DESIGN BY DISTRICT

12. The CAO or designate may alter the plans, because of conditions at the site, so that the Works function and operate in a manner satisfactory to the CAO or designate. Should the Works, as provided herein, prove to be in any way defective or should they not operate to the satisfaction of the CAO or designate, then the Owner shall, at his own expense modify and reconstruct the Works so that

the Works shall be fully operative and function to the satisfaction of the CAO or designate.

SUBSTANTIAL COMPLETION

13a. A Certificate of Substantial Completion shall be provided by the Approving Officer on the completion of the construction (except for street tree and boulevard plantings, development fence and fence inset plantings) listing all the deficiencies. This letter of Substantial Completion shall not be construed as acceptance of the Works.

PLANTING COMPLETION CERTIFICATE

13b. A Planting Completion Certificate shall be provided by the Parks Manager on the completion of street tree and boulevard plantings, development fence and fence inset plantings and upon the correction of all deficiencies in respect to street tree and boulevard plantings.

"AS-BUILT" SUBMISSION

14. The Owner covenants and agrees to submit to the Municipality the final "as-built" drawings and records of construction, and test results, as accepted by the CAO or designate, pursuant to Appendix "A" of the Bylaw, within 60 days of the date of the Letter of Substantial Completion.

MAINTENANCE PERIOD AND RESPONSIBILITY

15. The Owner covenants and agrees to maintain every part of the Works except for street tree and boulevard plantings, development fence and fence inset plantings in perfect order and in complete repair for a period of one year from the date shown on the Certificate of Substantial Completion in accordance with the requirements of the Subdivision and Development Control Bylaw.

The Owner covenants and agrees to maintain the street tree and boulevard plantings, development fence and fence inset plantings, for a period of one year from the date shown on the Planting Completion Certificate in complete accordance with the requirements of the Subdivision and Development Control Bylaw.

Should the Owner, for any reason, fail to maintain when ordered, then the Approving Officer, at his option, after giving the Owner seven days written notice (emergencies excepted), may do so, and the whole costs, charges and expenses so incurred by the Municipality will be payable by the Owner, as provided for herein. The decision of the Approving Officer will be final with respect to the necessity for repairs, or the adequacy of any work done.

Once any watermains covered by this Agreement are connected to the Municipal water system, only Municipal crews or contractors under the direct supervision of the Municipality may undertake work on such watermains. As such, Municipal crews or contractors retained by the Municipality will correct any defects, imperfections, acts of vandalism, settlements and/or rechlorination and flushing on such watermains which is deemed by the CAO or designate to be necessary during the one year period from the date shown on the Certificate of Substantial Completion and the whole of such costs, charges and expenses so incurred by the Municipality in undertaking such work including but not limited to contractor costs will be payable by the Owner as provided for herein. Any rechlorination and flushing work on any watermain will be considered to be "emergency" work and as such the Owner may not receive prior notice that such work is being undertaken by the Municipality.

CERTIFICATE OF ACCEPTANCE

16. The Municipality covenants and agrees that upon satisfactory completion by the Owner of all of the covenants and conditions in this Agreement, including the maintenance of the Works in complete repair for a period of one (l) year, but excluding covenants and conditions related to street trees and boulevard plantings, development fence and fence inset planting requirements, to provide the Owner with a Certificate of Acceptance of the Works, signed by the CAO or designate. Notice of acceptance of the Works will be issued by the CAO or designate when all deficiencies have been corrected, as-built drawings and service record cards received, and the maintenance period outlined herein has expired. The Certificate of Acceptance will be in the form outlined in Appendix "D" to the Bylaw. All such Works and Services remain at the risk of the Owner until the Certificate of Acceptance for the Works has been issued.

The Municipality covenants and agrees that upon satisfactory completion by the Owner of all of the street tree and boulevard planting, development fence and fence inset planting requirements, including the one year maintenance period, to provide the Owner with a Planting Acceptance Certificate, signed by the CAO or designate. The street tree and boulevard plantings remain at the risk of the Owner until the Planting Acceptance Certificate has been issued. The development fence and fence inset plantings remain the responsibility of the Owner as per the terms of the restrictive covenant registered against the property.

FINAL BUILDING INSPECTION

17. The Owner covenants and agrees that the Municipality will withhold the granting of a Final Inspection for the use of any

WITHHELD

building or part thereof, constructed upon the Lands until all the essential services herein have been completed to the satisfaction of the Approving Officer.

OWNER INDEMNIFIES MUNICIPALITY

18. The Owner covenants and agrees to save harmless and effectually indemnify the Municipality against

(a) all actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever brought by reason of the construction, installation, maintenance or repair of the Works;

(b) all expenses and costs which may be incurred by reason of the construction, installation, maintenance or repair of the Works resulting in damage to any property owned in whole or in part by the Municipality for which the Municipality by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, install, maintain or repair;

(c) all expenses and costs which may be incurred by reason of liens for non-payment of labour or materials, Workmen's Compensation, Unemployment Insurance, Federal or Provincial tax, check-off or encroachments owing to mistakes in survey;

(d) all expenses and costs which may be incurred by the Municipality as a result of faulty workmanship and defective material in any of the Works installed by the Owner.

The above clauses shall not be construed as to extinguish any rights which the Municipality would have were it not for the inclusion of Clause 18 in this Agreement.

INSURANCE BY OWNER

19. The Owner will at his sole expense throughout the currency of this Servicing Agreement carry Comprehensive Liability Insurance acceptable to the Municipality in the amount of at least three million dollars ($3,000,000.00) with insurance companies licensed to carry on business in the Province of British Columbia in partial discharge of its obligation under Clauses 18(a), (b), (c) and (d).

INSURANCE COVERAGE

20. The Owner covenants and agrees to provide the following insurance coverage, and to provide the Municipality with a copy of the insurance policy prior to the commencement of any construction of the Works:

(a) To protect the Owner and the Municipality against all claims arising out of:

(i) Death or injury to persons; and

(ii) Damage to, or loss of use of, any property of third persons, including without limiting the foregoing, the following classes of property: real property, chattels, land, works, buildings, structures, wires, conduits, pipes, mains, shafts, sewers, tunnels, and apparatus in connection therewith, even when the damage or loss of use is caused by vibration, moving, shoring, underpinning, raising, rebuilding or demolition of any building, structure or support, or by excavation, tunnelling or other work below the surface of the ground or water; and

(iii) Damage to or loss of any Municipal buildings, structures, stores, equipment and materials included in or required for the carrying out of the "Works."

(b) Every policy of insurance required will:

(i) Name "THE DISTRICT OF PORT HARDY" as an additional insured; and

(ii) State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and

(iii) State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Municipality, delivered to The District of Port Hardy CAO or designate.

SECURITY DEPOSIT

21. As security for the due performance of all of the covenants and promises contained in this Agreement the Owner has forthwith deposited with the Municipality a security deposit in the amount of $ _____ , in the form of cash or a Letter of Credit acceptable to the Municipality (herein called the Security Deposit).

FORFEIT OF SECURITY DEPOSIT

22. In the event that the Owner fails to construct and install the Works and Services prescribed herein within the time specified in Clause 8, the said Security Deposit of $ _____ will be forfeited to the Municipality.

USE OF SECURITY

23. The Owner agrees that if all the Works or obligations are not completed, installed or performed pursuant to this Agreement, the Municipality may complete or fulfil the Works or obligations at the cost of the Owner and deduct from the Security Deposit held by the Municipality the cost of such completion, and the balance of the deposit shall be returned to the Owner, less any additional administration fees or costs incurred. If there is insufficient money on deposit with the Municipality then the Owner will pay such deficiency to the Municipality immediately upon receipt of the Municipality's bill for completion. It is understood that the Municipality may do such Works either by itself or by Contractors employed by the Municipality. If the Works are completed as herein provided, then the deposit shall be returned to the depositor.

RELEASE OF SECURITY

24. If the Approving Officer is of the opinion that the Works or any portion thereof have been adequately completed, and the Owner's covenants performed in compliance with this Agreement, and if there is no litigation pending or threatened by any third party against the Municipality as a result of, or arising from, the construction of the Works, the CAO or designate may return all, or any portion of the Security Deposit to the Owner at such times and in such amounts as he may deem proper, provided only that he will retain an amount equal to l5% of the Security Deposit, with a minimum of $1,000 and a maximum of $20,000, to secure the performance of the maintenance required of the Owner (hereinafter called the Maintenance Deposit). In addition to the above, for street tree and boulevard plantings, development fence and fence inset plantings, the Maintenance Deposit shall be 20% of the security deposit for street tree and boulevard plantings, development fence and fence inset plantings.

RETURN OF MAINTENANCE SECURITY

25. If the Approving Officer is satisfied that the Owner has complied with the covenants contained in this agreement and if there is no litigation pending or threatened by any third party against the Municipality as a result of, or arising from, the construction of the Works, the CAO or designate may direct that the Maintenance Deposit be returned to the Owner and thereinafter the Owner's responsibility for the Works shall cease.

ADMINISTRATION FEE

26. The Owner covenants and agrees to pay to the Municipality a non-refundable fee in the amount of $ _____ to cover Municipal administration and processing costs. These fees are payable prior to the signing of this Agreement or the commencement of construction of the works.

NO OTHER REPRESENTATIONS

27. It is understood and agreed that the Municipality has made no representations, covenants, warranties, guarantees, promises or agreements (verbal or otherwise) with the Developer other than those in this agreement.

COMPLIANCE WITH BYLAWS

28. Subject to this Agreement, the within Works and the development herein shall comply with all of the Bylaws of The District of Port Hardy.

NO WAIVER

29. The Owner covenants and agrees that nothing contained or implied herein shall prejudice or affect the rights and powers of the Municipality in the exercise of its functions under any public and private statutes, bylaws, orders and regulations, all of which may be fully and effectively exercised in relation to the said Lands as if the Agreement had not been executed and delivered by the Owner.

MUNICIPAL CHARGES

30. The Owner covenants and agrees to pay the Municipality any and all costs and expenses which the Municipality has incurred in constructing watermain tie-ins, utility connections and any other work undertaken by the Municipality on behalf of the Owner. The payment for such work shall be made by the Owner within 30 days of the date of the invoice, mailed to the Owner by the Municipality. Upon receiving payment and upon request of the Owner, the Municipality shall reduce the letter of credit for the invoiced amount. Should payment not be received by the Municipality within 30 days of the date on the Municipality's invoice to the Owner, the Municipality shall draw the invoiced amount from the security deposit posted by the Owner.

PATENTS AND COPYRIGHTS

31. The Developer shall pay all royalties, patent and license fees and hold and save the Municipality, its officers, agents, servants and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, articles, or appliances manufactured or used in the execution of the work, including their use by the Municipality, and if the Developer shall fail to save the Municipality, its officers, agents, servants and employees in manner aforesaid any monies collected from the Municipality, its officers, agents, servants and employees by reason of such failure shall be recoverable form the Developer.

WHENEVER	the word "will" is used in this Agreement it will be construed as imperative (mandatory).		
WHENEVER	the singular or the masculine is used in the Agreement it will be construed as meaning the plural or the feminine or body corporate or politic where the context or the parties hereto so require.		
THIS CONTRACT	shall enure to the benefit of and be binding upon the parties hereto, their respective successors and assigns.		
IN WITNESS WHEREOF	the parties hereto have executed this contract the day and year first above written.		
FOR CORPORATE BODY	SIGNED, SEALED AND DELIVERED The Corporate Seal of: _____ was hereunto affixed in the presence of: *Signature* _____ *Name* _____ *Title* _____	))))))))))	SEAL
FOR PRIVATE INDIVIDUAL	SIGNED, SEALED AND DELIVERED by the above named in the presence of (witness): *Signature* _____ *Name* _____ *Occupation* _____ *Address* _____ _____ _____	))))))))))	_____ *Owner's Signature*
FOR THE DISTRICT OF PORT HARDY	SIGNED, SEALED AND DELIVERED The Corporate Seal of the District of Port Hardy was hereunto affixed in the presence of: _____ Mayor	)))))))	

_____) SEAL
Chief Administrative Officer

APPENDIX "G" - RECOMMENDED STREET TREES

Varieties of the following trees are recommended for street use;
Maple, Dogwood, Hawthorne, Birch, and Ash.
Other varieties may be approved for use by District of Port Hardy staff,
upon submission of appropriate supporting information from the proponent.

NON-RECOMMENDED STREET TREES

The following trees are not for street use due to: weak wood, destructive roots, thorns, insects, disease problems, and/or drooping branches.

Alnus Rubra (Red Alder)
Catalpa
Juglans sp. (Walnuts)
Malus (fruiting apple)
Populus sp. (Poplars)
Prunus (fruiting cherry)
Pyrus (fruiting pears)
Quercus Palustris (Pin Oak) except "Crownright"
Salix sp. (Willows)
Tilia americana (American Linden, Basswood)
Ulmus americana, U. parvifolia, U. pumila (Elm: american, chinese, siberian)

Most conifer trees are not recommended due to sight clearance problems and root system requirements. Exceptions may be made for extremely wide boulevards, parkways or ample root-system spaces.

APPENDIX "H" - SUPPLEMENTARY SPECIFICATIONS

Division 1-General Requirements

Section 01010S-General

1.0	Master Municipal Construction Documents	.1	The District of Port Hardy has adopted the Master Municipal Construction Documents published by the Master Municipal Construction Documents Association for use on all engineering works in the designed and constructed both by the District and by consultant engineers on behalf of developers.
2.0	Incorporation by Reference	.1	The Master Municipal Construction Documents are incorporated by reference into and form part of District Bylaw.
3.0	Order of Precedence	.1	Should conflict exist between the two documents, precedence is taken in the following order: The District Bylaw and its Schedules. The Master Municipal Construction Documents.
4.0	Format and Numbering System	.1	The Supplementary Specifications follow the same format and numbering system as the Master Municipal Specifications in the Master Municipal Construction Documents, but is differentiated from it by having the letter "S" placed after the section number.

Section 01011S-List of Approved Materials and Products

1.0	Approval	.1	This List of Approved Materials and Products was revised and approved by the CAO or designate to supersede all previous oral and written approvals and all lists of an earlier date.
		.2	Subject to the restrictions contained herein, materials and products named in this List are approved for use in the District of Port Hardy.
		.3	In the context of this Section, a product is approved when the vendor obtains a letter from the CAO or designate stating that such product is approved for use in the District of Port Hardy, and that the name of the product is entered into the List of

Approved Materials and Products.

.4 Where brand names are specified for a product, any proposal for an alternate product requires the approval of the CAO or designate.

.5 A product is acceptable when it meets all the requirements stipulated in the Master Municipal Specifications and the Supplementary Specifications. It refers to a generic product which may be incorporated into the works without specific approval. Names of generic products are not entered into the List of Approved Materials and Products.

2.0 Specifications

.1 Specifications which an approved or an acceptable product has to meet are stipulated in the Master Municipal Specifications and the Supplementary Specifications. Section numbers are listed for quick reference only.

3.0 Exclusions

.1 This List contains products which are specifically excluded by the CAO or designate for use in the District of Port Hardy, even though such products may be listed as approved in the Master Municipal Specifications.

.2 Unless specifically excluded by the CAO or designate, all approved products listed in the Master Municipal Specifications are acceptable for use in the District of Port Hardy subject to the restrictions on use as listed.

4.0 Revisions

.1 The CAO or designate may revise this list at any time without prior notice by adding or removing listed products or by making any other changes to the specifications or restrictions.

5.0 List of Approved Materials and Products

"Generic" = Acceptable products meeting specifications but are not specifically approved by name.

Product	Specifications MMS Section	Approved Material/Type	Approved Product	Restrictions
Water Main	02666 - 2.2	Ductile Iron PVC Prestressed Conc Steel	"Generic"	PVC pipe up to 300 mm only. Larger size PVC pipe to be approved by the CAO or designate for specific installations only. All PVC watermains shall be blue. No HDPE pipe allowed.

Product	Specifications MMS Section	Approved Material/Type	Approved Product	Restrictions
Water Fitting	02666 - 2.2.3	Cast Iron Ductile Iron Compact Ductile Iron	"Generic"	IPEX C900 Class 150 5° bend approved. No other PVC fittings for mainline water mains.
Water Service Connection	02666 - 2.5.1	Copper Polyethylene	"Generic"	No polybutylene pipe. Pipes larger than 50 mm to be same as mainline pipes.
Gate Valve	02666 - 2.3.2		AVK resilient seat Bibby-Ste-Croix resilient seat Canada Valve Clow resilient seat Jenkins McAvity Mueller resilient seat Terminal City	All direct bury mainline valves shall be resilient seat gate valves.
Butterfly Valve	02666 - 2.3.3		Mueller	Butterfly valve not to be used unless approved by the CAO or designate for specific installations only.
Blowoff Valve	02666 - 2.3.4		"Generic"	
Air Valve	02666 - 2.3.5		Apco GA Valmatic	Combination air valves only.
Hydrant	02666 - 2.6		Mueller Modern-Centurion Terminal City C71P	
Corporation Stop	02666 - 2.7.2		Ford Mueller	Up to 50 mm only. Use mainline gate valve for larger sizes.
Curb Stop	02666 - 2.7.3		Ford Mueller	Up to 50 mm only. Use mainline gate valve for larger sizes. No cylinder type.
Coupling	02666 - 2.2.3.10	Plain end	CAN-PAC CDB Dresser 38 or 162 Robar	No repair clamp allowed. Other couplings may be pre-approved by the CAO or designate
		Flanged	Dresser 128 Robar	
Joint Restrainer	02666 - 2.2.3.11		Uni-Flange Series 1300, 1350, 1390, 1300C, 1390C	No set screw type for PVC pipes. Pre-approval required from the CAO or designate for specific installations only.
Joint Protection Tape	Bylaw Schedule B Section W8		Trenton Tec Tape	To be used when minimum clearance with a sewer cannot be achieved.
Saddle	02666 - 2.5.3		Canpac SC-2 Robar 2506DS Robar 2706DS	
Water Valve	02666 - 2.3.6		ACS D-7	Nelson type.

Product	Specifications MMS Section	Approved Material/Type	Approved Product	Restrictions
Box			Dobney D-5 K Casting 1977 Terminal City UIF 85	Cover marked “WATER”.
Curb Stop Box	02666 - 2.3.7		Daigle Dobney D-10 Mueller A-726 Mueller A-728 Terminal City Trojan VSB1, 2	Nelson type. Cover marked “WATER”.
Bolt and Nut	02666 - 2.2.3.7	Zinc plated Cadmium plated	"Generic"	
Tie Rod	02666 - 2.2.3.8	Zinc plated Cadmium plated	"Generic"	
Storm Drain	02721 - 2.2	PVC	"Generic"	No HDPE pipe allowed.
	02721 - 2.1	Non-reinforced Conc Reinforced Concrete Reinf Concrete Arch Reinf Conc Elliptical	"Generic"	
	02721 - 2.3	Ribbed PVC	Ultra Rib LOC PVC	Concentric ribs only. No spiral ribs.
Storm Culvert	02723 - 2.2	Non-reinforced Conc Reinforced Concrete Reinf Concrete Arch Reinf Conc Elliptical Reinf Conc Box	"Generic"	Min diam 300 mm. No HDPE pipe allowed. PVC, Ribbed PVC or corrugated steel requires prior approval from the CAO or designate for specific installations only.
Storm Service Connection	02721 - 2.4	PVC Inspection chamber	"Generic" Leron 70A 4x8 WLP-1Green Top 200mm Locking Lid 200 mm Locking Chamber	New PVC main: use manufactured wyes. New conc main: use PVC stub with bell, pre-cemented with epoxy resin. New or existing ribbed PVC main: use Inserta-Tee. Other mains: use strap saddles. Meter box (PVC) to cover inspection chamber.
Sanitary Sewer	02731 - 2.0	Pipes same as for storm applications	"Generic"	No HDPE or ribbed PVC pipe.
Sanitary Force Main	02732 - 2.0	Pipes, fittings, mainline valves, boxes, couplings,	"Generic"	No HDPE Pipe allowed. Valve box cover marked “SANITARY SEWER”.

Product	Specifications MMS Section	Approved Material/Type	Approved Product	Restrictions
		bolts and nuts, and tie-rods same as for water applications		Air valves to be specially designed for sewage applications.
Sanitary Service Connection	02731 - 2.3	Pipes same as for storm service connection	"Generic"	
		Inspection Chamber	LeRon 70A 4x8 WLP-1 Red Top 200 mm Locking Lid 200 mm Locking Chamber	Meter box (PVC) to cover inspection chamber.
Manhole Frame and Cover	Supplementary Detail Drawing SDD 1		ACS C-18 Dobney C-18 K Casting CK18 Sierra Dist SD18 UIF 1AC, 1AF,1LAF Westview TR18	Cover marked " PORT HARDY" and either "STORM SEWER" or "SANITARY SEWER".
Catch Basin and Other Castings		CB Frame	ACS B-24 Dobney B-24 K Casting BJ24D Sierra Dist SD24 UIF 60CBFD Westview TR24	
		CB Grate	ACS B-23 Dobney B-23 K Casting BJ23 Sierra Dist SD23 UIF 60CBG Westview TR23	
		Lawn Basin Grate	ACS B-22A Dobney B-22A	
		Valve Chamber Frame and Cover	ACS C-20 Dobney C-20 K Casting CK20	Cover marked "PORT HARDY" and "WATER".
Traffic Signal	16550 - 2.0	Controller	Econolite Intrex	NEMA
		Primary Head	"Generic"	300 mm diam red, yellow, green
		Signal Head Mount	Astro Brac	4 head unit
		Pedestrian Heads	ICC Model No. 7090	460x450 mm illuminated display c/w 2-crate visor, full silhouette
		Pedestrian Button	Rees Model No. 1371	Mushroom type plunger
		Pre-emption	Opticom	
		Safety Cable	"Generic"	3.5 mm stranded SS aircraft cable secured with C crimps.

Division 2- Sitework

Section 02512S-Hot Mix Asphalt Concrete Paving

1.6	Inspection and Testing	.3	Take minimum 5 cores on first lift when testing is ordered by the Chief Administrative Officer or designate.

Section 02523S-Concrete Walks, Curbs and Gutters

3.9	Expansion Joints	.4	Do not use bond break compounds in lieu of expansion joint between back of curb and sidewalk.

Section 02666S-Waterworks

2.7	Underground Service Line Valves and Fittings	.2	Corporation stops
		.3	37 and 50 mm, no wheel gate valve to be used.
		.3	Curb stops
		.6	37 and 50 mm, no wheel gate valve to be used.
3.5	Granular Bedding	.6	Use granular bedding materials for ductile iron watermains.

Section 02725S-Manholes and Catchbasins

2.1	Materials	.14	Joints to have rubber gaskets conforming to ASTM C443.
		.22	Manhole base: precast for sanitary and may be cast in place for storm.

Section 02831S-Chain Link Fences and Gates

2.1	Materials	.3	Fabric for chain link fence adjacent to parks and conservation areas to be black vinyl coated 3.55 mm diameter (9 gauge) wire mesh.
		.5	Use bottom rail similar to top rail in place of bottom tension wire.
3.2	Installation of Fence	.12	Weld top rail and bottom rail between post and terminal post. Spot weld overhanging waterproof dome caps to terminal and

corner post tops.

.15 Secure fence fabric to top and bottom rails and line posts.

.17 Weld all joints and ground smooth.

3.4 Touch Up

.1 Clean all welded surfaces before touch up painting.

Division 16-Electrical

Section 16550S-Electrical

2.5	Concrete Pole Bases	.1		Bases and controller foundations to be pre-cast concrete as shown on Contract Drawings. Cast in place concrete bases or controller foundations require approval from Chief Administrative Officer or designate.
		.7		Anchor bolts shall provide continuous full thread contact around the anchor nut circumference.
2.6	Poles and Related Equipment	.1		Poles for general street lighting to be single unit davit type as detailed on Supplementary Detail Drawing SDE 4.
		.5		Service base as shown on Standard Detail Drawing E5.18 to be used with single unit davit luminaire pole, Type 2 shaft and post top pole only. Padlock tab to be drilled with a 10 mm hole for a Municipal lock prior to galvanizing.
		.6		Small hand hole cover to have a vertical backer bar.
2.9	Conductor Connectors	.1		Conductor connectors for streetlight to be Burndy type wire nuts.
2.12	Grounding Equipment	.5		Grounding plate to be 6.4 mm thick galvanized steel plate with a minimum surface area of 0.2 m^2 as detailed on Supplementary Detail Drawing SDE 3.
2.13	Pedestrian Pushbutton	.2		Do not use pushbutton with integral sign.
2.16	Traffic and Pedestrian Signal Heads	.4		All overhead primary traffic heads to be 300 mm diameter.
2.17	Traffic and Pedestrian Signal Head Mounting Hardware	.1	.2	Do not use Richmond and Vancouver types.
		.2	.1	Do not use plumbizer or spring cushion hangers for overhead mounting.
			.2	Do not use City of Vancouver type hangers for overhead mounting

			.3 Adjustable bracket to be equipped with a stainless steel safety cable.
2.21	Streetlight and Sign Luminaires	.1	Streetlight luminaries to be standard Cobra type high pressure sodium GTE Sylvania model No. R34 or Landmark L2.
3.3	Concrete Bases	.1	Install concrete bases as shown on Supplementary Detail Drawings SDE 1 and SDE 2 and Standard Detail Drawings E1.2 to E1.8, E1.12 to E1.14, and E2.1 to E2.7.
3.6	Poles and Related Equipment	.7	Field drilling of holes larger than 33 mm diameter also not allowed in single unit streetlight davit poles.
		.11	Replace pole if more than 2% of pole's surface requires repair with cold galvanizing.
		.12	Seal flange between streetlight poles and service bases with exterior grade silicone.
3.7	Traffic and Pedestrian Signal Head Mounting	.1	Install traffic and pedestrian signal heads as shown on Standard Detail Drawings E6.1, E6.2 and E6.9. Install stainless steel safety cables between pole arms and overhead signal heads.
3.9	Pedestrian Pushbuttons	.1	Install pedestrian pushbuttons and posts as shown on Standard Detail Drawings E7.1 and E7.3 - pushbutton with separate sign.
3.13	Wiring	.11	.4 Fill each wire nut type connector with waterproof sealant if the splice is within an underground junction box, or is otherwise susceptible to direct contact with water.
		.13	Bond poles to service bases with a No. 8 conductor.
3.14	Pole Mounted Receptacles	.2	Install receptacles at locations and to elevation and orientation shown on Contract Drawings.
3.16	Detector Loops	.1	Detector loops to be round type unless specified otherwise on Contract Drawings.
3.19	Grounding	.4	Ground plate requires approval from Chief Administrative Officer or designate.

SCHEDULE "B" – MASTER MUNICIPAL CONSTRUCTION DOCUMENTS

a) Volume I

Tender Document
Production Manual

Published by:
The Master Municipal Construction Documents Association
Printed 1996

b) Volume II

Instructions to Tenderers – Part II
General Conditions
Specifications
Standard Detail Drawings

Published by:
The Master Municipal Construction Documents Association
Printed 1996

c) Volume III

Construction Contract
Administration Manual

Published by:
The Master Municipal Construction Documents Association
Printed 1996

SCHEDULE "C" - ZONING MAPS

The zoning maps entitled Schedule A1 and A2 constitute Schedule C to this Bylaw.

SCHEDULE "I" - OFF-STREET PARKING COVENANT

Following are the forms for an Off-Street Parking Covenant

DISTRICT OF PORT HARDY

OFF-STREET PARKING COVENANT

THIS AGREEMENT made the day of , A.D. 199 .

BETWEEN:

DISTRICT OF PORT HARDY
P.O. Box 68
Port Hardy, British Columbia
VON 2P0

(hereinafter called the "Grantor")

OF THE FIRST PART

AND:

(hereinafter called the "Grantee")

OF THE SECOND PART

WHEREAS:

A. The Grantor is the registered owner in fee simple of:

(hereinafter called the "Land")

B. The Grantor is required to provide _____off-street vehicular parking spaces in connection with a development located upon:

(hereinafter called the "Development Land")

NOW THEREFORE in consideration of the premises and the covenants herein contained and for other valuable consideration, receipt and sufficiency of which is hereby acknowledged by the parties, the parties hereto covenant and agree each with the other as follows:

1. The Grantor shall not use the Land except to provide off-street parking spaces for the benefit of owners and occupiers and their licensees and invitees of the Development Land.

2. The off-street parking spaces on the Land shall be provided in conformity with the standards prescribed in Part 7 of District of Port Hardy Land Use By-law.

3. The Grantor covenants and agrees for itself, it's heirs, executors, successors and assigns, that it will at all times perform and observe the requirements and restrictions herein before set out but so nevertheless that the same shall be binding upon the Grantor as personal covenants only during the period of its respective ownership of any interest in the land.

4. The restrictions and covenants herein contained shall be covenants running with the land and shall be perpetual, and shall be registered in the Land Title Officer pursuant to Section 215 of the Land Title Act as covenants in favour of the grantee.

5. This agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, administrators, executors, successors and assigns.

6. Wherever the expression "Grantor" and "Grantee" are used herein, the same shall be construed as meaning the plural, feminine or body corporate or politic where the context of the parties so require.

IN WITNESS WHEREOF the parties hereto have hereunto set their respective hands and seals the day and year first above written.

THE CORPORATE SEAL of DISTRICT OF PORT HARDY was affixed hereto in the presence of:)

_____
Mayor) (SEAL)

_____
Chief Administrative Officer)

THE CORPORATE SEAL OF)
was)
affixed hereto in the presence)
of its proper Officers in that) (SEAL)
behalf:)
)
)
)
_____)
Authorised Signatory)
)
)
)
_____)
Authorised Signatory)

SIGNED, SEALED AND DELIVERED)
in the presence of:)
)
)
)
_____)
Witness) (SEAL)
)
)
)
_____)
Address)
)
)
)
_____)
Occupation)

SCHEDULE "J" - APPLICATION FOR PRELIMINARY SUBDIVISION LAYOUT CONSIDERATION

Following are the forms for making application for Preliminary Subdivision Layout Consideration

DISTRICT OF PORT HARDY

APPLICATION FOR PRELIMINARY SUBDIVISION LAYOUT CONSIDERATION

I/We hereby apply for preliminary subdivision layout consideration for the property described as (legal description);

_____

and located at (street address or general location);

_____

Required application fee of $ _____ and the completed Preliminary Subdivision Layout Consideration Information Form are attached.

_____ _____
(Date) (Applicant's Signature)

THIS APPLICATION IS MADE WITH MY FULL KNOWLEDGE AND CONSENT

_____ _____
(Date) (Registered Owner's Signature)

Where the Applicant is NOT the REGISTERED OWNER and the Application must be signed by the REGISTERED OWNER or his SOLICITOR.

FOR OFFICE USE ONLY

APPLICATION FEE $_____ RECEIVED. Receipt No. _____

_____ _____
(Date) (Signature of Official)

PRELIMINARY SUBDIVISION LAYOUT CONSIDERATION INFORMATION FORM

The information requested in this form is required to expedite the application and assist the staff in preparing a recommendation.

This form is to be completed in full and submitted with all requested information, Preliminary Subdivision Layout Consideration Application, Application Fee and Certificate of State of Title or of Indefeasible Title for the subject property.

Applicant and Registered Owner

1. (1) Applicant's Name _____

Address _____ Postal Code _____

Telephone: Business _____ Home _____

(2) Registered Owner's Name _____

Address _____ Postal Code _____

Telephone: Business _____ Home _____

(3) A copy of a State of Title Certificate, or a copy of a Certificate of Indefeasible Title, dated no more than _____ (30) days prior to submission of the application must accompany the application as a proof of ownership.

Application Fee

2. An Application Fee as set out in Section 7 of this By-law shall be made payable to The District of Port Hardy and shall accompany the Application.

Preliminary Subdivision Layout Consideration

3. (1) Legal Description in Full

_____

_____

(2) Location (street address of property, general description or map)

_____

_____

(3) Size of Property (area, number of parcels) _____

(4) Present Land Use Designation _____

(5) Description of the Existing Use/Development

_____

_____

_____

_____

_____

(6) Number of lots proposed

_____ number x _____ average size

_____ number x _____ average size

_____ number x _____ average size

(7) Description of the Proposed Use/Development (use separate sheet if necessary)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(8) Services Currently Existing or Readily Available to the Property (check applicable area)

Services	Currently Existing		Readily Available*	
	YES	NO	YES	NO
Road Access				
Water Supply				
Sewage Disposal				
Hydro				
Telephone				
School Bus Service				

NOTE: *Readily Available means existing services can be easily extended to the subject property.

(9) Proposed Water Supply Method

_____

_____

(10) Proposed Sewage Disposal Method

_____

_____

(11) Approximate Commencement Date of Proposed Project

_____

Reasons in Support Application

5. Reasons and comments in support of the application (use separate sheet if necessary)

_____

_____

_____

_____

_____

Attachments

6. At the time of providing Application and Information Forms to the applicant, the Chief Administrative Officer shall indicate which of the following attachments are required or not required for this Application. The Chief Administrative Officer may require additional information.

   (1) A dimensioned Sketch Plan drawn to scale of _____to _____showing the parcel(s) or part of the parcel(s) to be redesigned and the location of existing buildings, structures and uses.

   REQUIRED: Yes ____ No ____

   (2) A dimensioned Site Plan drawn to a scale of _____to _____showing the proposed use, buildings and structures, highway access, walkway, right-of-ways, etc.

   REQUIRED: Yes ____ No ____

   (3) A Contour Map (Plan) drawn to a scale of _____to _____with contour interval of _____, showing flood plain, drainage areas, water courses, bodies of water and high water datum.

   REQUIRED: Yes ____ No ____

   (4) A dimensioned Sketch Plan drawn to a scale of _____to _____of the proposed subdivision, where subdivision (small or large) is contemplated.

   REQUIRED: Yes ____ No ____

_____ _____
(Date) (Applicant's Signature)

FOR OFFICE USE ONLY

Forms duly completed, received.

_____ _____
(Date) (Signature of Officer)

SCHEDULE "L" - RIGHT OF WAY AGREEMENT

Following are the forms for making application for a Right of Way Agreement and Consent To Grant of Right-of-Way

DISTRICT OF PORT HARDY

RIGHT-OF-WAY AGREEMENT

THIS INDENTURE made the day of , 199 .

BETWEEN:

DISTRICT OF PORT HARDY
P.O. Box 68
Port Hardy, British Columbia
VON 2P0

(hereinafter called the "Grantor")

OF THE FIRST PART

AND:

(hereinafter called the "Grantee")

OF THE SECOND PART

WHEREAS the Grantor is the registered owner or is entitled to become the registered owner of an estate in fee simple of ALL AND SINGULAR those certain parcels or tracts of land and premises situate, laying and being in the _____, in the Province of British Columbia and being more particularly known and described as:

(hereinafter called the "Land of the Grantor")

AND WHEREAS this right-of-way is necessary for the operation and maintenance of the Works:

AND WHEREAS to facilitate the installation of a system of sewerage works, and/or waterworks, and/or drainage works, including all pipes, valves, fittings and facilities in connection therewith and/or hydro electric works including all wires, poles, conduits and other facilities in connection therewith; (hereinafter called the "Works"), the Grantor has agreed to permit the construction by the Grantee of the aforementioned works on a portion of the said Land and to grant for that purpose the right-of-way hereinafter described.

NOW THEREFORE THIS INDENTURE WITNESSETH that in consideration of the sum of One Dollar ($1.00) of lawful money of Canada, and now paid by the Grantee to the Grantor (the receipt and sufficiency of which is hereby acknowledged by the Grantor), and in consideration of the covenants and conditions hereinafter contained to be observed and performed by the Grantee and for other valuable consideration:

1.0 THE GRANTOR DOTH HEREBY:

1.1 Grant, convey, confirm and transfer, in perpetuity, unto the Grantee the full, free and uninterrupted right license, liberty, privilege, permission and right-of-way to lay down, install, construct, entrench, operate, maintain, inspect, alter, remove, replace, bury, cleanse, string, and otherwise establish one or more systems of Works upon, over, under and across that portion of the Lands of the Grantor, more particularly described as:

(hereinafter called the “Right-of-Way”)

1.2 Covenant and agree to and with the Grantee that for the purpose aforesaid and upon, over, under and across the Right-of-Way the Grantee shall for itself and its servants, agents, workmen, contractors and all other licensees of the Grantee together with machinery, vehicles, equipment, and materials be entitled at all times to enter, use, pass, and repass, labour, construct, erect, install, dig, carry away soil or other surface or subsurface materials, clear of all trees, growth, buildings or obstruction now or hereafter in existence, as may be necessary, useful, or convenient in connection with the operations of the Grantee in relation to the Works.

1.3 Grant, convey, confirm and transfer unto the Grantee for itself, and its servants, agents, workmen, contractors and all other licensees of the Grantee together with machinery, vehicles, equipment and materials the right of reasonable times to enter upon and to pass and repass over such of the Lands of the Grantor as may reasonably be required for the purpose of ingress to and egress from the Right-of-Way.

1.4 Transfer, assign and convey to the Grantee all right, title and interest in and to any Works that the Grantee, or the Grantor have prior to this Agreement established or constructed or maintained or operated within the Right-of-Way or in relation to any similar Works previously constructed by any party whatsoever within the Right-of-Way.

1.5 Grant, convey, confirm and transfer unto the Grantee for itself, and its servants, agents, workmen, contractors and all other licensees of the Grantee together with machinery, vehicles, equipment and materials for a period of two hundred (200) days only from the date of this Agreement, the full, free and uninterrupted right, license, liberty, privilege,

permission and right-of-way to enter upon, pass and repass, clear, labour, and use for the purpose of storing machinery, vehicles, equipment, material or supplies used or to be used in connection with the construction of the Works herein described, and for the purpose of placing or storing the surface or subsurface material to be excavated from the Right-of-Way upon and over that part or parts of the Lands of the Grantor described as:

(hereinafter called the "Working Right-of-Way)

Provided always, and it is hereby agreed that nothing herein contained shall permit the Grantee to dig, trench or otherwise disturb the subsurface of the Working Right-of-Way and the Grantee shall only clear such trees and growth and interfere and the Grantee shall only clear such trees and growth and interfere and disturb the surface of the Working Right-of-Way in a manner that is reasonably necessary in the conduct of its operations thereon;

2.0 THE GRANTOR HEREBY CONVENANTS TO AND AGREES WITH THE GRANTEE, as follows:

2.1 That the Grantor will not, nor permit any other person to erect, place, install or maintain any building, structure, mobile home, concrete driveway or patio, pipe, wire or other conduit on, over or under any portion of the Right-of-Way so that it in any way interferes with or damages or prevents access to, or is likely to cause harm to Works authorised hereby to be installed in or upon the Right-of-Way.

2.2 That the Grantor will not do nor knowingly permit to be done any act or thing which will interfere with or injure the said Works and in particular will not carry out any blasting on or adjacent to the Right-of-Way without the consent in writing of the Grantee, provided that such consent shall not be unreasonably withheld.

2.3 That the Grantor will not substantially diminish the soil cover over any of the Works installed in the Right-of-Way and in particular, without in any way limiting the generality of the foregoing, will not construct open drains or ditches along or across any of the Works installed in the Right of Way without the consent of the Grantee which will not be unreasonably withheld.

2.4 That the Grantor will from time to time and at all times upon every reasonable request and at the cost of the Grantee do and execute or cause to be made, done or executed all such further and other lawful acts, deeds, things, devices, conveyance and assurances in law whatsoever for the better assuring unto the Grantee of the rights hereby granted.

3.0 THE GRANTEE HEREBY COVENANTS TO AND AGREES WITH THE GRANTOR, as follows:

3.1 That the Grantee will not bury any debris or rubbish of any kind in excavations or backfill, and will remove shoring and like temporary structures as backfilling proceeds;

3.2 That the Grantee will thoroughly clean all lands to which it has had access hereunder of all rubbish and construction debris created or placed thereon by the Grantee and will leave such lands in a neat and clean condition.

3.3 That the Grantee will, as soon as weather and soil conditions permit, and so often as it may exercise the right of entry hereunder to any of the Lands of the Grantor, replace the surface soil as nearly as may be reasonably possible to the same condition as it was prior to such entry, in order to restore the natural drainage to such lands. PROVIDED HOWEVER that nothing herein contained shall require the Grantee to restore any trees or other surface growth but the Grantee shall leave such lands in a condition which will not inhibit natural regeneration of such growth.

3.4 That the Grantee will, as far as reasonably possible, carry out all work in a proper and workmanlike manner so as to do as little injury to the Lands of the Grantor as possible.

3.5 The Grantee will make good at its own expense all damage or disturbance which may be caused to the surface soil of the Lands of the Grantor in the exercise of its right hereunder.

3.6 The Grantee will, as far as reasonably possible, restore any fences, lawns, flower beds, at its cost as nearly as may be reasonably possible to the same condition that they were in prior to any entry by the Grantee upon the Lands of the Grantor.

4.0 THE PARTIES HERETO EACH HEREBY COVENANT TO AND AGREE WITH THE OTHER, as follows:

4.1 The said Works referred to above, together with all pipes, valves, conduits, wires, casings, fittings, lines, meters, appliances, facilities, attachments or devices used in connection therewith shall constitute the Works.

4.2 Notwithstanding any rule of law or equity to the contrary, the Works brought on to, set, constructed, laid, erected in, upon or under the Right-of-Way by the Grantee shall at all times remain the property of the Grantee notwithstanding that the same may be annexed or affixed to the freehold and shall at any time and from time to time be removable in whole or in part by the Grantee.

4.3 In the event that the Grantee abandons the Works or any part thereof the Grantee may, if it so elects, leave the whole or any part thereof in place and if so abandoned the Works, or part thereof, shall become the property of the Grantor.

4.4 That no part of the title in fee simple to the soil shall pass to or be vested to the Grantee under or by virtue of these presents and the Grantor may fully use and enjoy all the Lands of the Grantor subject only to the rights and restrictions herein contained.

4.5 That the covenants herein contained shall be covenants running with the land and that none of the covenants herein contained shall be personal or binding upon the parties hereto, save and except during the Grantor's seisin or ownership of any interest in the Lands of the Grantor, and with respect only to that portion of the Lands of the Grantor of which the Grantor shall be seized or in which he shall have an interest, but the Lands of the Grantor, nevertheless, be and remain at all time charges therewith.

4.6 If at the date hereof of the Grantor is not the sole registered owner of the Lands of the Grantor, this Agreement shall nevertheless bind the Grantor to the full extent of his interest therein, and if he shall acquire a greater or the entire interest in fee simple, this Agreement shall likewise extend to such after-acquired interests.

4.7 Where the expression "Grantor" includes more than one person, all covenants hereto on the part of the Grantor shall be construed as being several as well as joint.

4.8 This Agreement shall ensure to the benefit of and be binding upon the parties hereto and their respective heirs, administrators, executors, successors and assigns as the case may be and wherever the singular or masculine is used, it shall be construed as if the plural or the feminine or neuter, as the case may be, had been used, where the parties or the context hereto so require and the rest of the sentence shall be construed as if the grammatical and terminological changes thereby rendered necessary had been made.

IN WITNESS WHEREOF the parties hereto have executed these presents in the manner and on the date hereinafter appearing.

SIGNED, SEALED AND DELIVERED)
by the Grantor this)
day of 199
in the presence of:)
)
)
)
Witness:)
)
)
)
Address:)
)
)
)
Occupation:)

THE CORPORATE SEAL OF THE)
was hereto affixed)
this day of 199)
in the presence of:)
)
)
_____)
Authorised Signatory)
)
)
_____)
Authorised Signatory)

THE CORPORATE SEAL OF THE)
DISTRICT OF PORT HARDY was)
hereto affixed this)
day of 199)
in the presence of:)
)
)
_____)
Mayor)
)
)
_____)
Chief Administrative Officer _____)

CONSENT TO GRANT OF RIGHT-OF-WAY

KNOWN ALL MEN BY THESE PRESENTS that _____is the registered holder of a charge by way of _____ against the within described property which said in charge is registered in the Land Title Office, _ under number __ , for an in consideration of the sum of One Dollar ($1.00) paid by the Grantee to the said Chargeholder (the receipt where of is hereby acknowledged), agrees with the Grantee, its successors and assigns, that the within Right-of-Way shall be an encumbrance upon the within described property in priority to the said charge in the same manner and to the same effect as if it had been dated and registered prior to the said charge.

IN WITNESS WHEREOF the parties hereto have caused these presents to be signed, sealed and delivered in the presence of or in the presence of its duly authorised officers this _____ day of _____ , 199 .

SIGNED, SEALED AND DELIVERED)
by the Grantor this)
day of 199)
in the presence of:)
)
Name:)
)
Address:)
)
City:)
)
Occupation:)
(as to all signatures of)
Grantor))

THE CORPORATE SEAL OF THE GRANTOR)
was hereunto affixed this day)
of , 199 in the)
presence of:)
)
)
_____)
Mayor)
)
_____)
Chief Administrative Officer

SCHEDULE "M" – APPLICATION FOR PERMISSION TO CONSTRUCT WORKS WITHIN HIGHWAY RIGHT-OF-WAY FOR THE PURPOSE OF PROVIDING ACCESS TO A HIGHWAY

Following are the forms for application for permission to construct works within highway right-of-way for the purpose of providing access to a highway – APPROVAL OF WORKS will be shown with the signature of the Approving Officer or designate on the bottom of the form.

DISTRICT OF PORT HARDY

APPLICATION FOR PERMISSION TO CONSTRUCT WORKS WITHIN HIGHWAY RIGHT-OF-WAY FOR THE PURPOSE OF PROVIDING ACCESS TO A HIGHWAY

I/We hereby apply for permission to construct, use and maintain access works within the right-of-way of a highway in accordance with the particulars, plan and specifications submitted herewith. I/We understand that the submission of this form constitutes an application only and the works may not be commenced unless and until a permit is received. (In the case of an access already installed, but not covered by a permit, this application is still required in order to authorize use of the same.

Full legal description of the property to be served: (1)_____
(I attach a sketch plan showing the information required by Form H0201)
Civic Address: _____

Name of Highway:_____
The property is located approximately _____ km N/S.E.W. side of community of _____

PLEASE SEE NOTES BELOW FOR GUIDANCE

I/We request access at (2) _____ locations as shown on the accompanying sketch plan
The intended land use is (3) _____
The intended land use permitted by zoning (3a)_____
And the size and scope of the operation is (4) _____
_____
The access is required for a period of (5) _____

I/We are the registered owner(s) or lessee(s) of the above described property
Signed: _____ Date:_____

Name and address (PLEASE PRINT) _____
Mailing Address: _____
Postal Code _____ Telephone: _____

I/We wish to have the access permit issued in the name of (6) _____
Name and address (PLEASE PRINT) _____
Mailing Address: _____
Postal Code _____ Telephone: _____

NOTES

(1) Property described must have highway frontage.
(2) Insert number of accesses required
(3) Insert specific land use proposed (for example, single family dwelling, farm, motel and restaurant, service station etc.)
(3A) Indicate the permitted uses for the existing zoning on the property. This can be obtained from the District of Port Hardy
(4) Insert figures indicating number of dwelling units, square metres of floor area of buildings, sleeping units, employees, seats in restaurants etc.
(5) (a) insert the word “indefinitely” if required for long-term use; or
(b) insert the specific number of months of years if required for a temporary period.
(6) (a) Insert “myself” or “ourselves” if required by owner or lessee; or
(b) Insert name and address or person or company who will actually develop the property and construct, use and maintain the access works, if required by other party (for example property is under option and owner proposes to sell or lease same); or
(c) if access is required for land beyond, give name of owner(s) and legal description of parcel involved.

APPROVED _____ DATE:_____
Chief Administrative Officer or designate

APPENDIX "C" - SUPPLEMENTARY DETAIL DRAWINGS

General Notes and Numbering Systems

The *Supplementary Detail Drawings* as contained in this Schedule are primarily concerned with clarifying the Design Criteria. Construction details and practices are specified in the *Standard Detail Drawings* in the *Master Municipal Construction Documents* (MMCD). The *Supplementary Detail Drawings* are supplemental to the *Standard Detail Drawings*. However, in case of conflict, the *Supplementary Detail Drawings* take precedence over the *Standard Detail Drawings*.

The *Standard Detail Drawing* numbers in the MMCD are prefixed by a single letter to indicate works or services. To avoid possible confusion, the *Supplementary Detail Drawing* numbers are further prefixed by "SD". The 2 numbering systems are summarised as follows:

	Supplementary Detail Drawings	Standard Detail Drawings in MMCD
General	SDG 1, 2, 3 ...	G1, 2, 3 ...
Road	SDR 1, 2, 3 ...	R1, 2, 3 ...
Drainage	SDD 1, 2, 3 ...	S1, 2, 3 ...
Sanitary Sewers	SDS 1, 2, 3 ...	S1, 2, 3 ...
Water	SDW 1, 2, 3 ...	W1, 2, 3 ...
Street Trees	SDT 1, 2, 3 ...	-
Concrete & Misc	-	C1, 2, 3 ...
Electrical	SDE 1, 2, 3 ...	E1, 2, 3 ...

PLAN	PROFILE	DESCRIPTION
		PRESSURE REDUCING VALVE
		TEMPORARY CLEANOUT
300mm		CULVERT
C		CONDUIT
x x		FENCE LINES
		R/R TRACKS
		WHEELCHAIR LETDOWN
		EXISTING ℄ PAVEMENT
		EXISTING GROUND LINE
		S. OR E. EDGE PAVEMENT
		N. OR W. EDGE OF PAVEMENT
		N. OR W. DITCH OR GUTTER
		S. OR E. DITCH OR GUTTER
		N. OR W ℄
		S. OR E. ℄
	200 mm	CULVERT
		CATCHBASIN
		MANHOLE
	D-2 S-2	MANHOLE NO.

NOTE: SEE OTHER LEGEND IN MMS STANDARD DETAIL DRAWING G 1

TITLE

ADDITIONAL LEGEND
FOR CONTRACT DRAWINGS

Pg 113

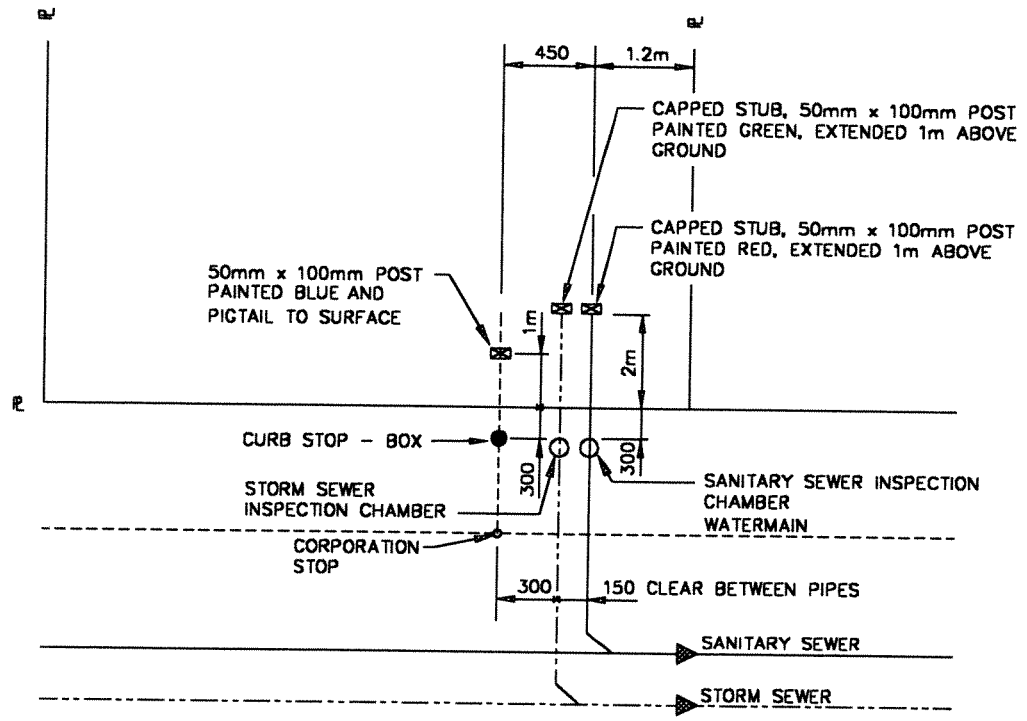
DISTRICT OF PORT HARDY

DATE APR / 98

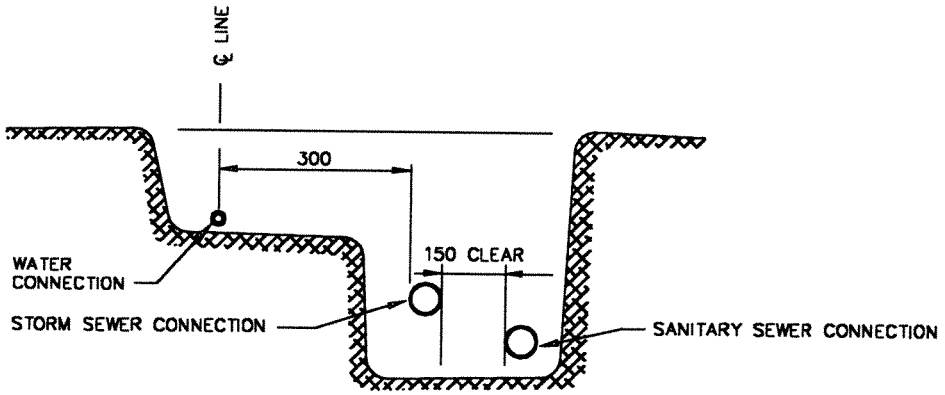
APPROVED

S.C.B.No. SCBE0037

SDG 1



PLAN



NOTE:

FOR WATER CONNECTION SEE STD. DWG. W2
FOR SANITARY CONNECTION SEE STD. DWG. S7
FOR STORM CONNECTION SEE STD. DWG. S8
CONNECTIONS TO BE PLACED AT LOWEST SIDE OF LOT

TITLE

TYPICAL LOT SERVICE CONNECTION

DISTRICT OF PORT HARDY

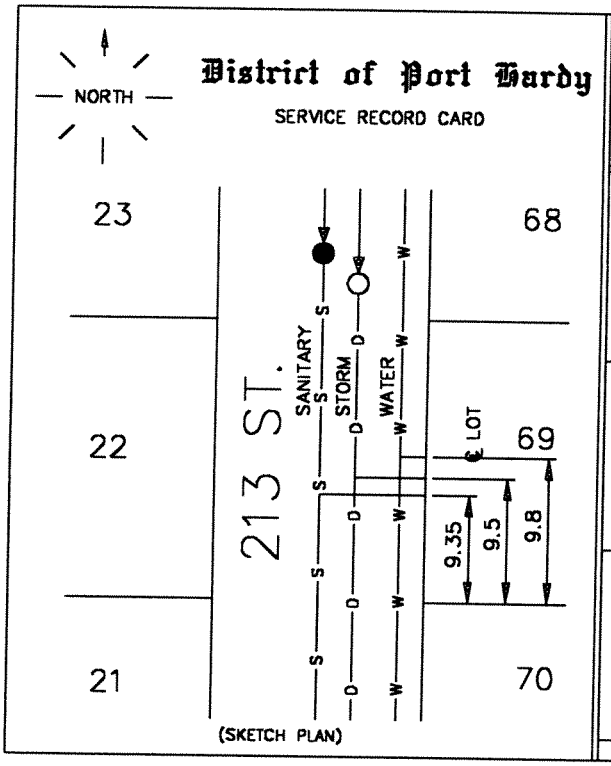
DATE APR / 98

APPROVED

S.C.S.No. SCBE0018

114.

SDG 2



Address		Project #
6907 – 213 ST.		8–13–10
Type of Building: S.F.D.	Lot No.: 69	Roll No.: 7133–KA

WATER	CONNECTION DATE MARCH 30, 1996
	SIZE & TYPE 20mm ø POLY TUBING
	METER N/A
	LOCATION TO ℄ 9.8m NORTH OF SOUTH WEST CORNER OF PROPERTY
SANITARY	CONNECTION DATE MARCH 29, 1996
	SIZE & TYPE 100mm ø PVC
	LOCATION TO ℄ 9.35m NORTH OF SOUTH WEST CORNER OF PROPERTY
	DEPTH 1.4m
STORM	CONNECTION DATE MARCH 29, 1996
	SIZE & TYPE 150mm ø PVC
	LOCATION TO ℄ 9.5m NORTH OF SOUTH WEST CORNER OF PROPERTY
	DEPTH 1.45m

TITLE

SAMPLE SERVICE RECORD CARD

115

DISTRICT OF PORT HARDY

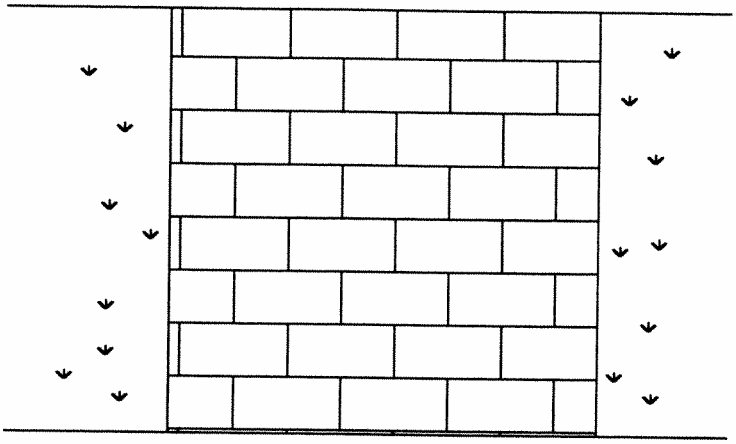
DATE APR / 98

APPROVED

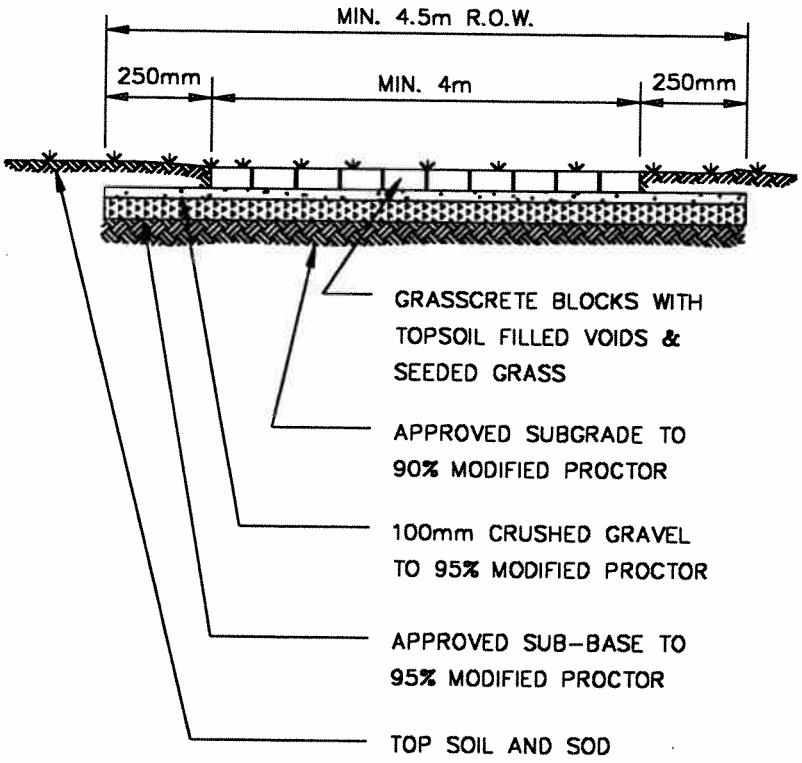
S.C.B.No. SCBE0019

SDG 3

PLAN VIEW



SECTION



NOTES:

1.) ACCESS TO BE CONSTRUCTED PRIOR TO SUBSTANTIAL COMPLETION

2.) ACCESS TO CONFORM TO FINAL LOT GRADE

3.) ACCESS TO HAVE MIN. 1.0% CROSSFALL

TITLE

TYPICAL TRAVELLED ACCESS
IN RIGHT OF WAY

116

DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0021

SDG 5

1.) If only one sidewalk and/or one row of streetlights are required, place them on the side opposite to the Power & Telephone corridor.

2.) Streetlights are required on both sides where pavement width is greater than 11 metres.

3.) Place streetlights at lot lines where practical. Alternate the streetlights with P & T boxes. Fire hydrants and catch basins to be located within 1.0m of lot lines whenever possible

4.) 3 Phase wiring may require a wider P & T corridor. Consult B.C. Hydro for corridor requirements.

5.) Where a road serves properties with different zonings, the higher zoning standard will determine the road standard.

6.) French drains shall be provided behind curbs in all wet areas.

7.) All permanent works on private property shall be protected by a registered right of way.

8.) Frontage road elevation may be designed to match the adjacent land and does not need to match the arterial road profile.

9.) Arterial road boulevard designs,including sidewalk widths may be varied by the Municipal Engineer, to suit adjacent land uses, frontage widths, landscaping, utility poles, retaining walls, or other structures.

10.) Where there is temporarily no alternative access serving a development adjacent to a divided arterial road, the planned curbed median may be temporarily replaced by a 5 metre wide 2-way left turn lane or median openings. Installation of the permanent curbed median shall be at the discretion of the Municipal Engineer, depending on traffic volumes and other safety considerations.

11.) All ditches more than 1 metre deep, in rural roads, shall be replaced by storm sewers properly designed with allowance for upstream needs.

12.) Utilities shall not be installed in ditches unless the section of the ditch is replaced by a culvert. The alternative is to secure additional right of way for the utilities on private property.

13.) Where a utility pole or hydrant location conflicts with a ditch, the ditch shall be diverted with a proper culvert.

14.) Road drains under a half road shall be designed to include the flow from the future half of the road.

15.) The ultimate right of way width for a half road, when fully built, shall be a minimum of 20 metres. The Municipal Engineer may specify a different pavement width for the unfinished portion.

16.) All dimensions are in metres unless otherwise indicated.

TITLE

TYPICAL NOTES FOR ROADWORKS

117

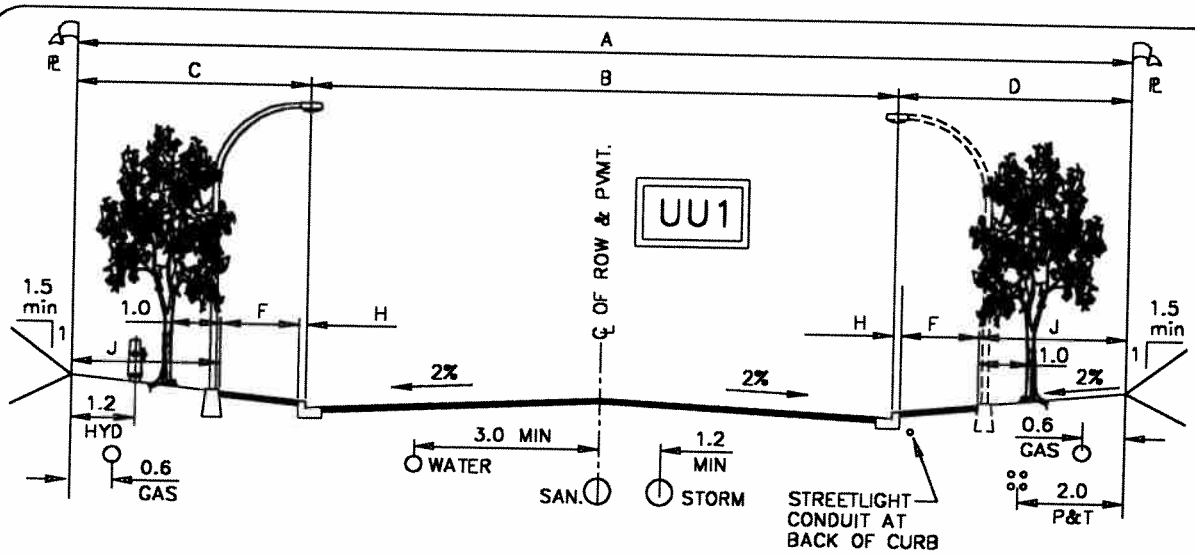
DISTRICT OF PORT HARDY

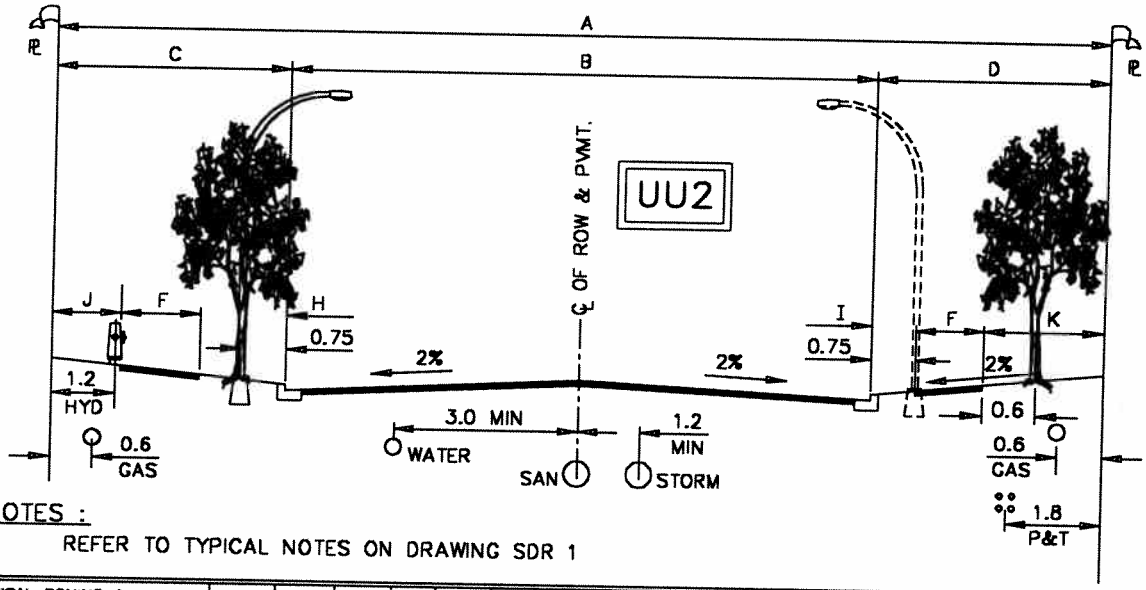
DATE APR / 98

APPROVED

S.C.B.No. SCBE0009

SDR 1





NOTES :

REFER TO TYPICAL NOTES ON DRAWING SDR 1

TYPICAL ZONING & STREET CLASS	ROAD TYPE	CURB TYPE	No. OF S/W's	ROW A	PVMT B	BLVD C(=D)	S/W WIDTH F	Curb to S/W H/I	P/L to S/W J/K	OPERATIONAL CHARACTERISTICS
Residential – sf local (limited)	UU1–A	R	1	18	8.6	4.7	1.5	0.15	3.05	Cul–de–sacs only
Residential – sf (local)	UU1–B	R	2	20	8.6	5.7	1.5	0.15	4.05	Parking, 1 mvg lane
Residential–collector (mf)	UU1–C	B	2	22	12.2	4.9	1.5	0.15	3.25	2 mvg, 2 pkg, wide turns
Residential–collector (sf)	UU1–D	R	2	20	11	4.5	1.5	0.15	2.85	2 pkg lanes, 2 mvg lanes
Industrial – local	UU1–E	B	1	22	12.2	4.9	1.5	0.15	3.25	Rig parking, wide turns, 1 mvg
Comm/High Den Residential local	UU2–A	B	2	20	11	4.5	1.5	1.35/0.15	1.65/2.85	Some Parking, 3.5 mvg lanes
Comm/Indust – collector	UU2–B	B	2	25	15	5.0	1.5	1.35/0.75	2.15/2.75	4 mvg pk hr/2 mvg+2 pkg base
Arterial 4 lane undivided	UU2–C	B	2	25	15	5.0	see Notes	Varies	Varies	4 mvg pk hr/2 mvg+2 pkg base

TITLE

URBAN UNDIVIDED ROADS

118

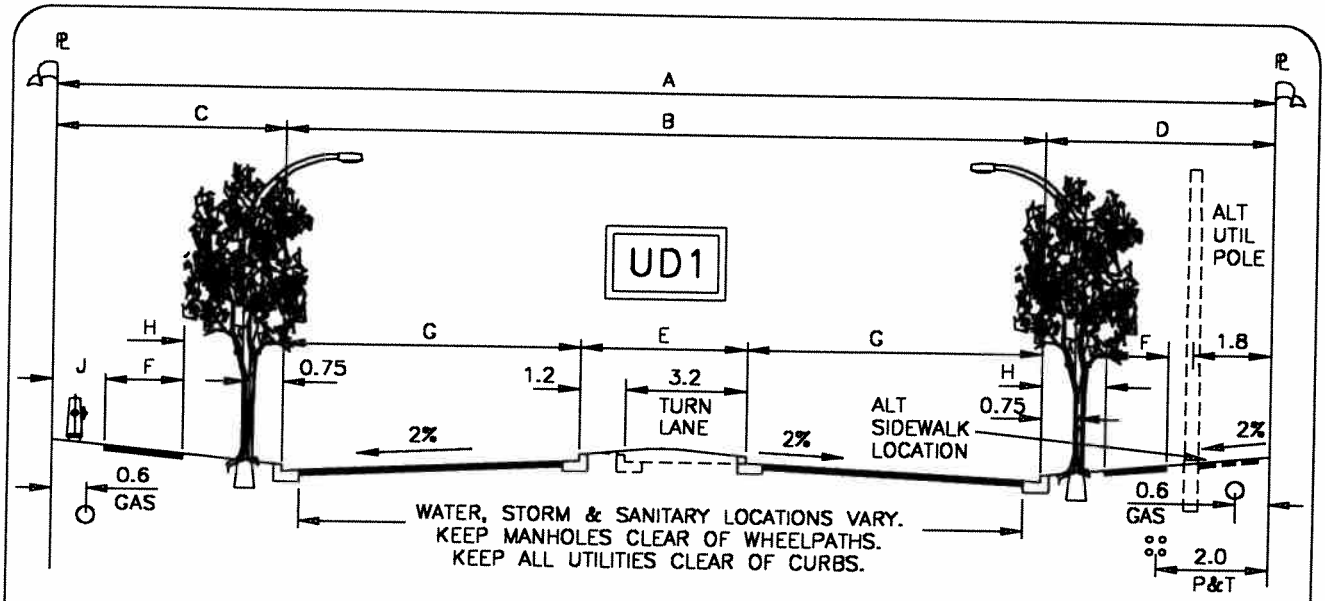
DISTRICT OF PORT HARDY

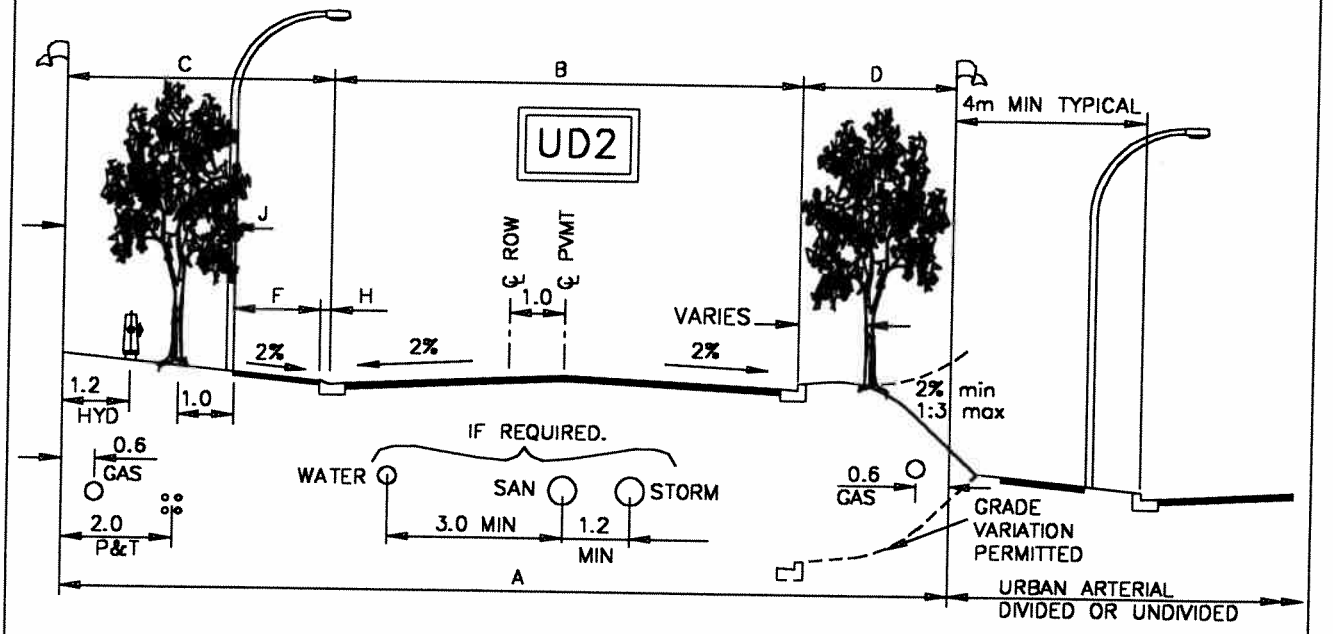
DATE APR / 98

APPROVED

S.C.B.No. SCBE0005

SDR 2





NOTES :

REFER TO TYPICAL NOTES ON DRAWING SDR 1

TYPICAL ZONING LAND USE	ROAD TYPE	CURB TYPE	No. OF S/W	ROW A	PVMT B	BLVD -S/W C	BLVD w/P&T D	Median E	S/W F	W/DIV PVMT G	CURB toS/W H	P/L toS/W J	OPERATIONAL CHARACTERISTICS
Arterial 4lane divided (min)	UD1-A	B	2	26	16.8	4.6	4.6	1.2	see Notes	7.8	1.35	1.75	4 mvg pk hr/2 mvg+2pkg base
Arterial 4lane divided (ltb)	UD1-B	B	2	28	20	4	4	4.4	see Notes	7.8	1.35	1.15	4 mvg pk hr/2 mvg+2pkg base
Arterial 6lane divided (ltb)	UD1-C	B	2	35	27	4	4	4.4	see Notes	11.3	1.35	1.15	6 mvg pk hr/4 mvg+2pkg base
SF-Resid'l frontage road	UD2-A	R,B	1	16	8.6	4.7	2.7	N/A	1.5	N/A	0.15	3.05	

TITLE

URBAN DIVIDED ROADS

119

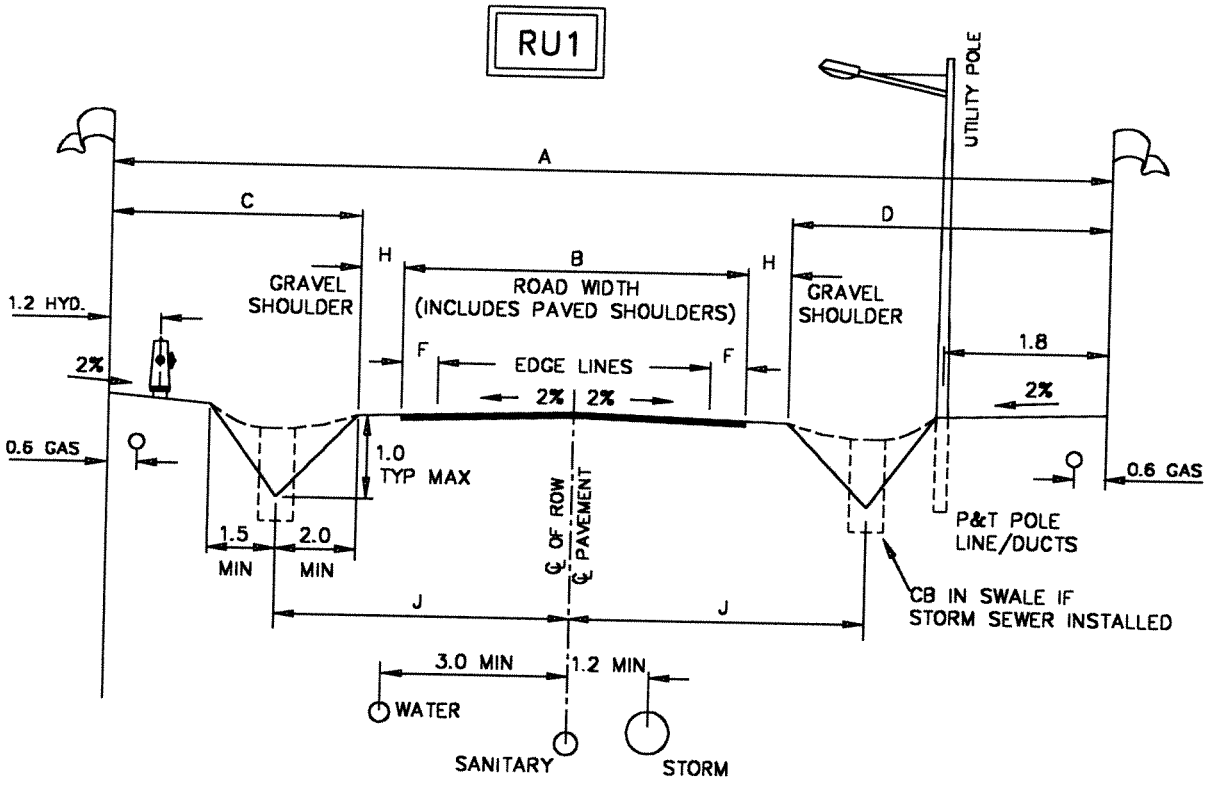
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.S.No. SCBE0001

SDR 3



NOTES :

REFER TO TYPICAL NOTES ON DRAWING SDR 1

TYPICAL ZONING LAND USE	ROAD TYPE	CURB TYPE	LOC. OF S/W	ROW A	PVMT B	BLVD C	BLVD w/P&T D	w/pav shldr F	w/grvl shldr H	max ditch ℄ to Pvmt ℄ J	OPERATIONAL CHARACTERISTICS
Rural – limited local	RU1–A	N/A	on road	18	6.8	3.6	3.6	0	2	7.5	cul–de–sac
Rural – residential	RU1–B	N/A	on road	20	6.8	4.6	4.6	0	2	7.5	2x3.5m mvg lanes, no pav shldrs
Rural–art'l/coll/grid local	RU1–C	N/A	on shldr	20	10.3	4.35	4.35	1.5	0.5	7.65	2x3.65 mvg lanes, pav shldrs

TITLE

RURAL ROADS

DISTRICT OF PORT HARDY

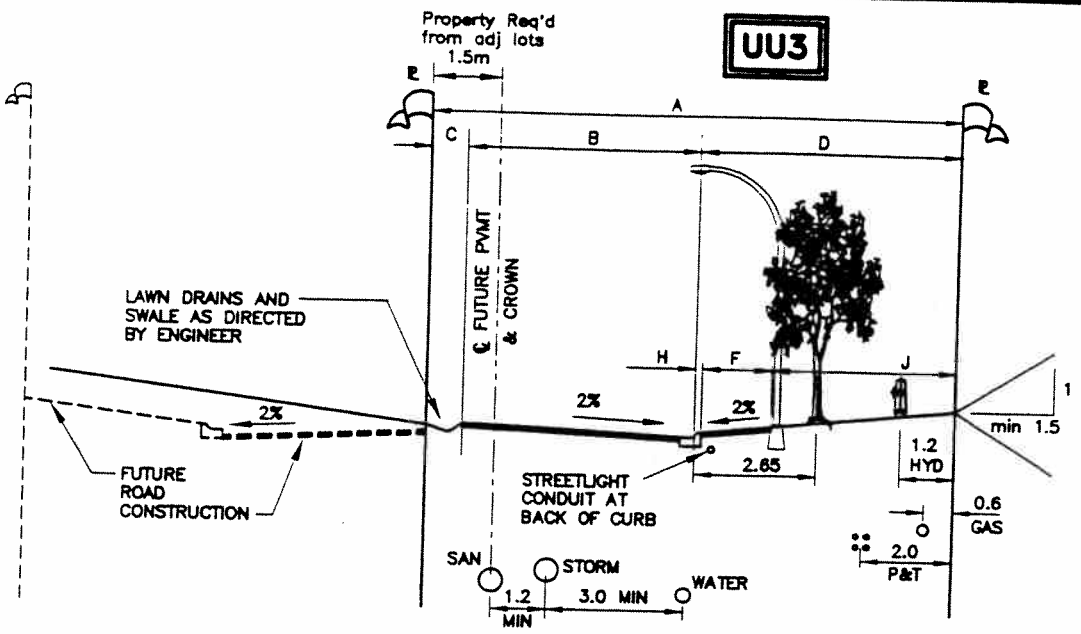
DATE APR / 98

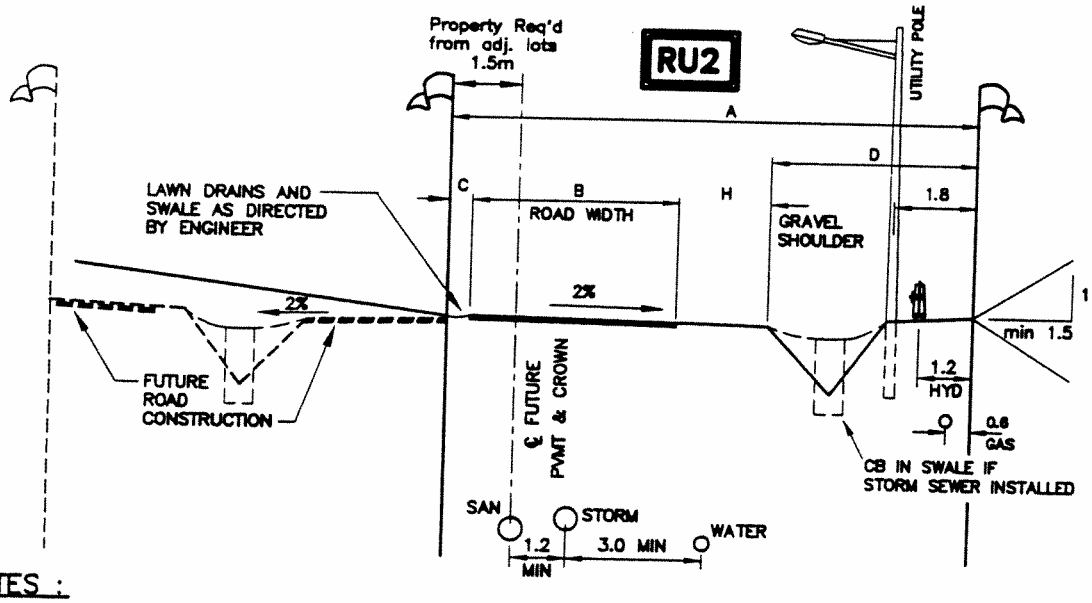
APPROVED

S.C.B.No. SCBE0006

120

SDR 4





NOTES :

REFER TO TYPICAL NOTES ON DRAWING SDR 1

TYPICAL ZONING LAND USE	ROAD TYPE	CURB TYPE	No. OF S/W	ROW A	PVMT B	BLVD C	BLVD w/P&T D	width S/W F	CURB –S/W H	PL to S/W J	OPERATIONAL CHARACTERISTICS
Urban Half Road	UU3–A	R	1	11.5	5	0.8	5.7	1.5	0.15	4.05	Interim; no parking
Rural Half Road	RU2–A	N/A	On Road (Loc'n of S/W)	11.5	4.5	0.5	4.5		2 (w/grvl shldr)	N/A	Interim; no parking

TITLE

HALF ROADS

121

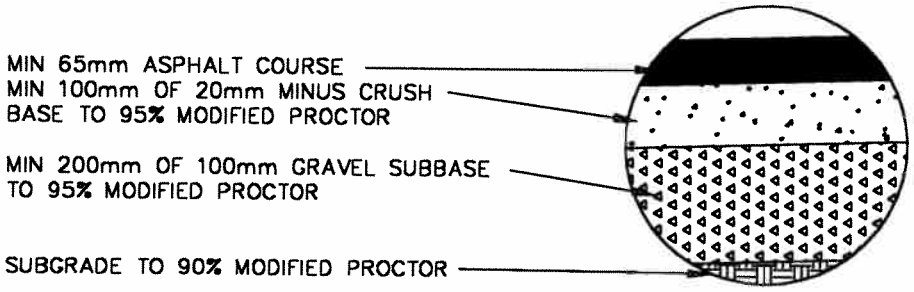
DISTRICT OF PORT HARDY

DATE

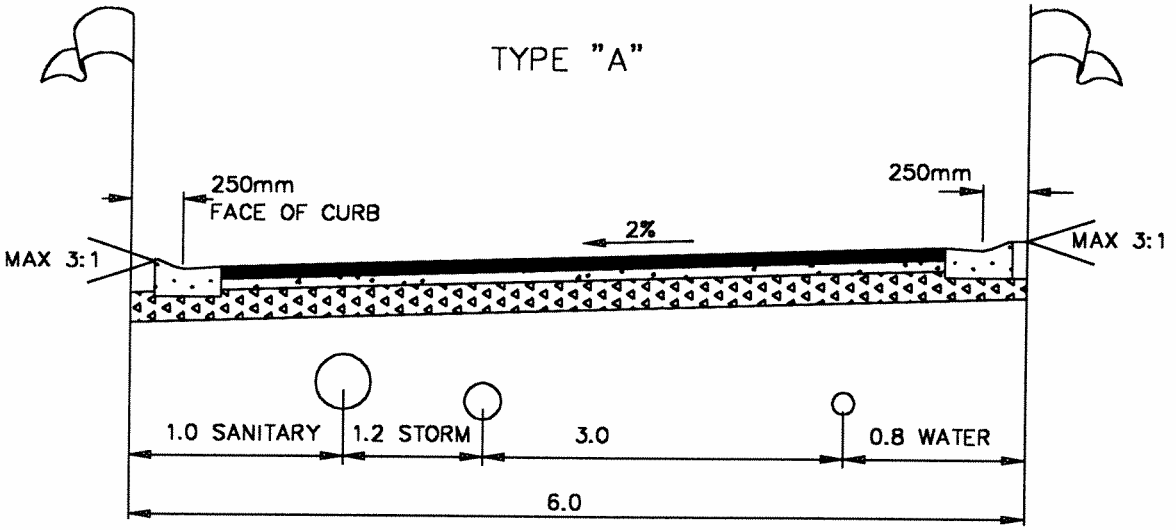
APPROVED

S.C.S.No.

SDR 5



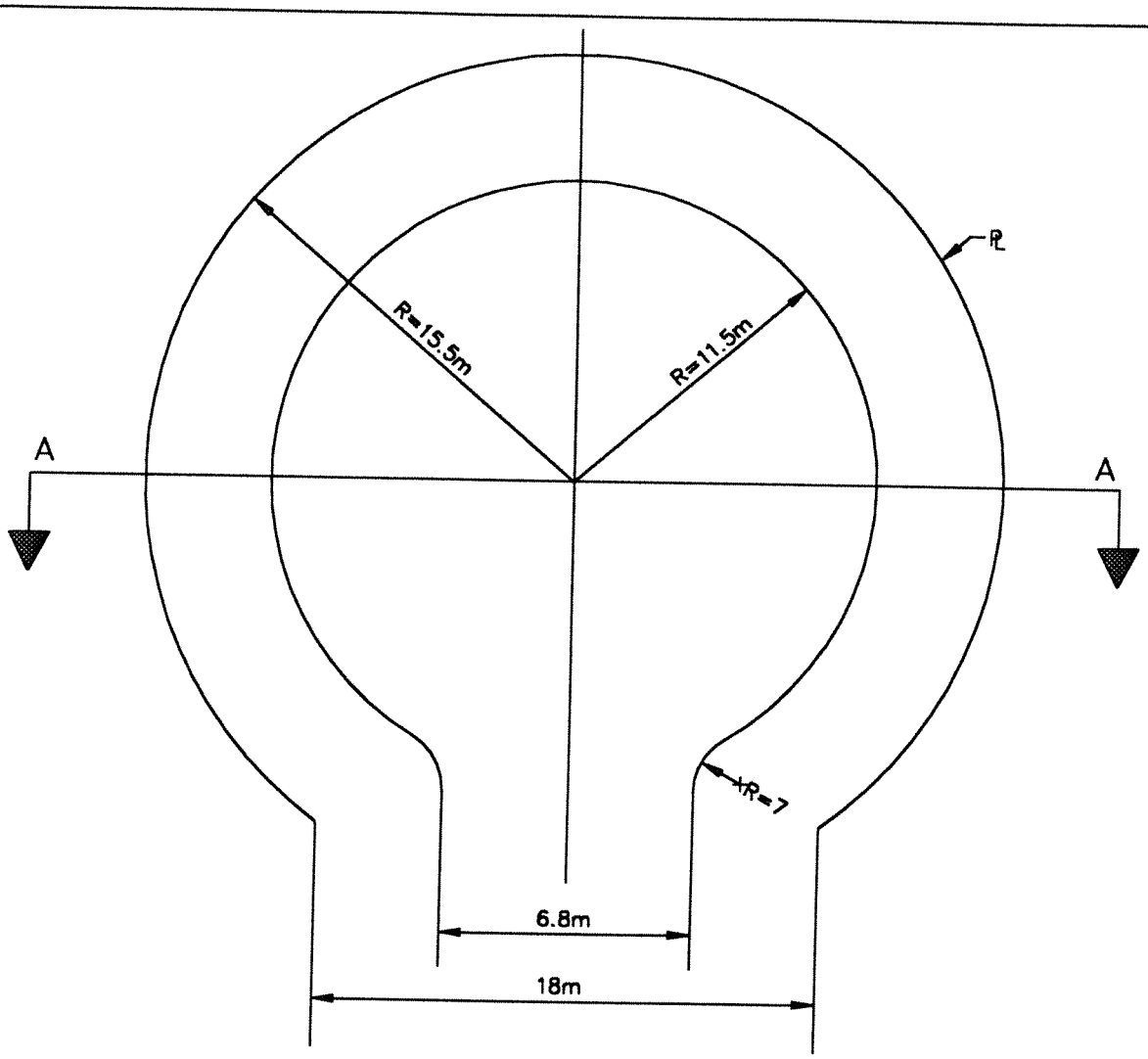
TYPE "A"

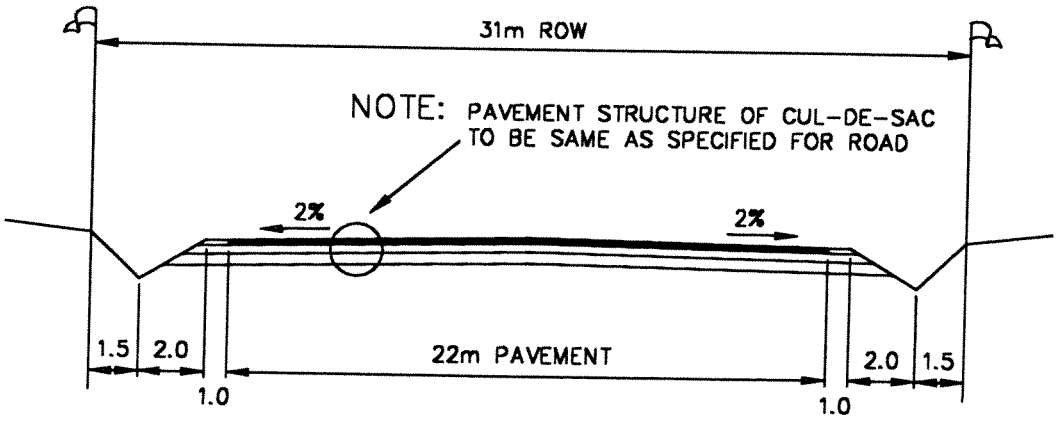


NOTES :

REFER TO TYPICAL NOTES ON DRAWING SDR 1

TITLE: LANE		122
DISTRICT OF PORT HARDY	DATE: APR / 98 APPROVED: S.C.B.No. SCBE0012	SDR 6





SECTION A–A

TITLE

RURAL CUL-DE-SAC

123

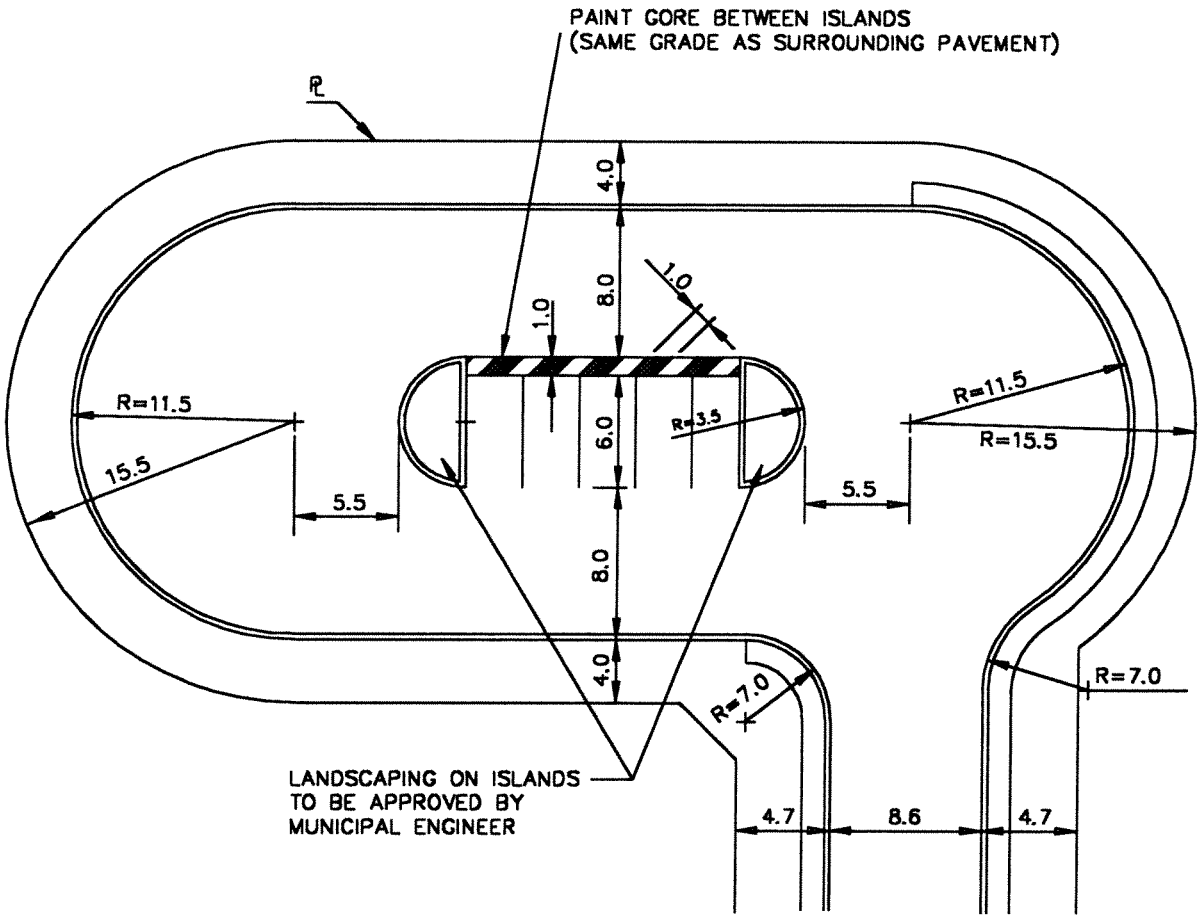
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0013

SDR 7



TITLE

ISLAND IN RESIDENTIAL CUL-DE-SAC

125

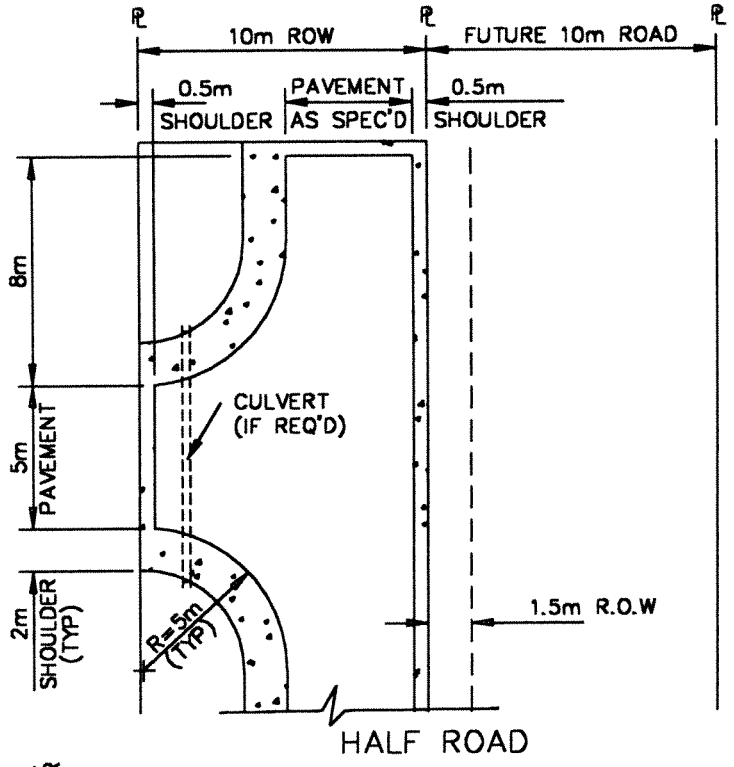
DISTRICT OF PORT HARDY

DATE APR / 98

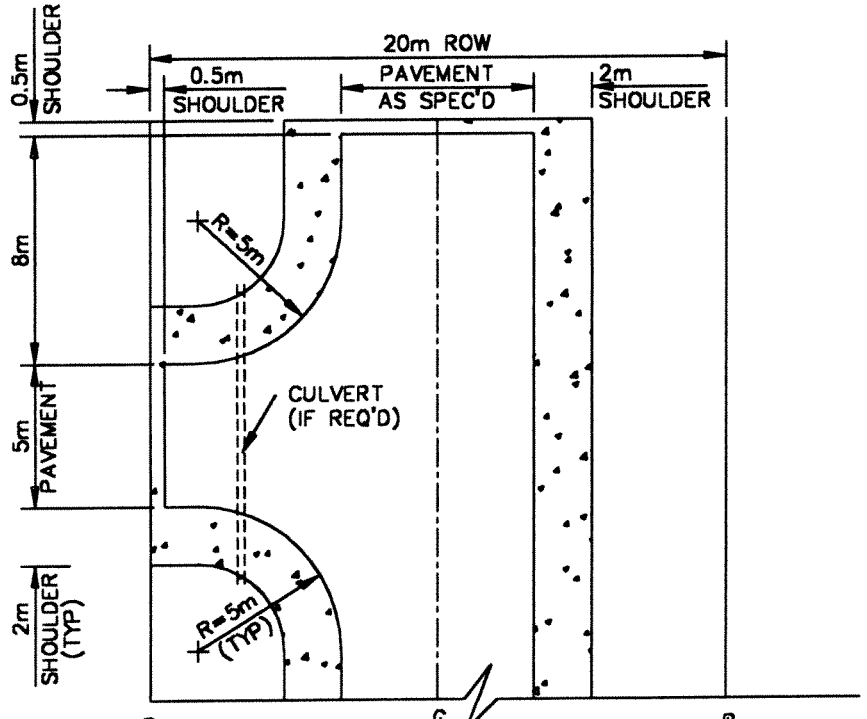
APPROVED

S.C.B.No. SCBE0008

SDR 9



HALF ROAD



FULL ROAD

TITLE

HAMMERHEAD TURNAROUND

126

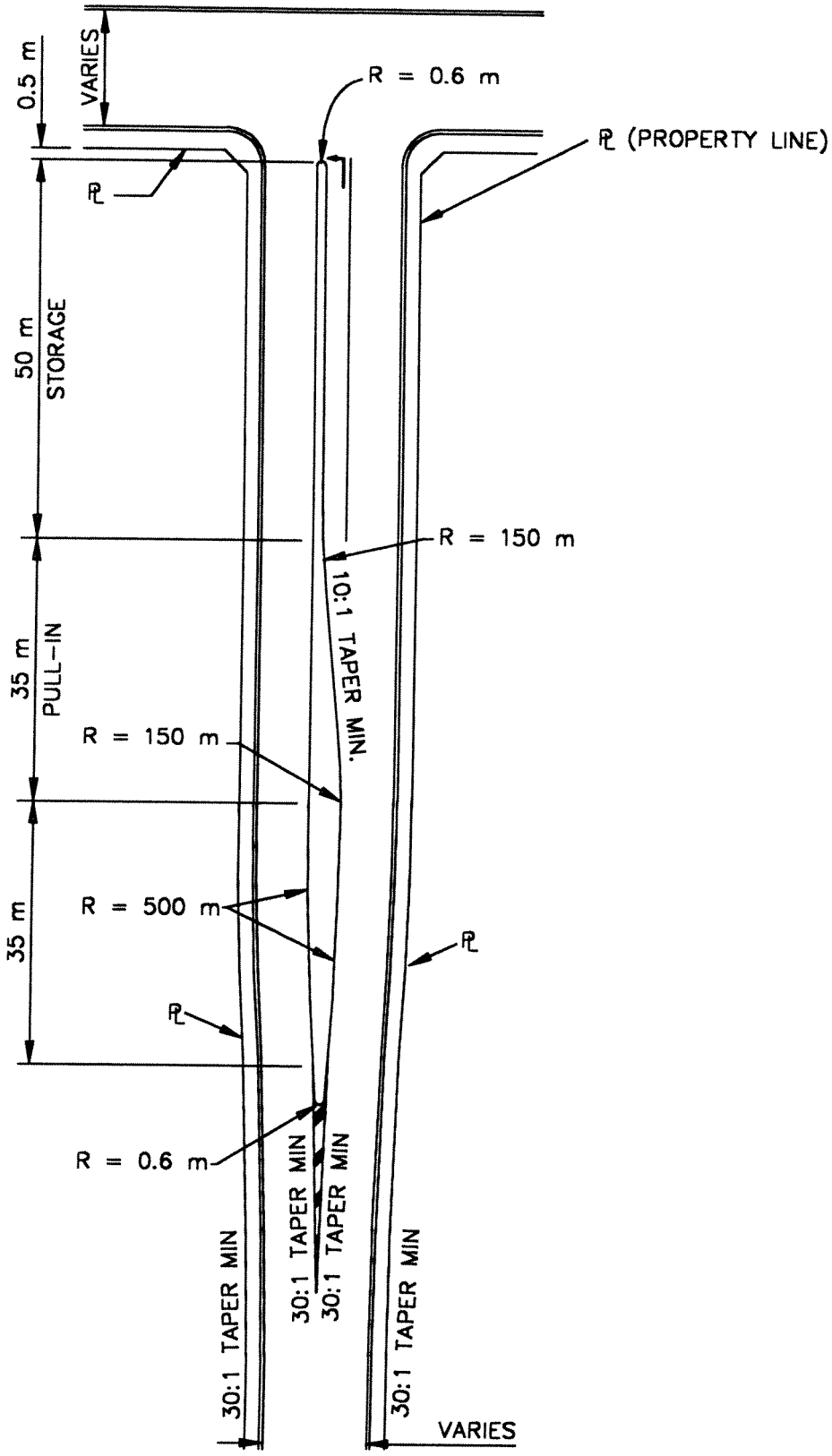
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0014

SDR 10



NOTE: SEE STANDARD DRAWINGS FOR CROSS SECTION DIMENSIONS.

TITLE

TYPICAL LEFT TURN LANE

127

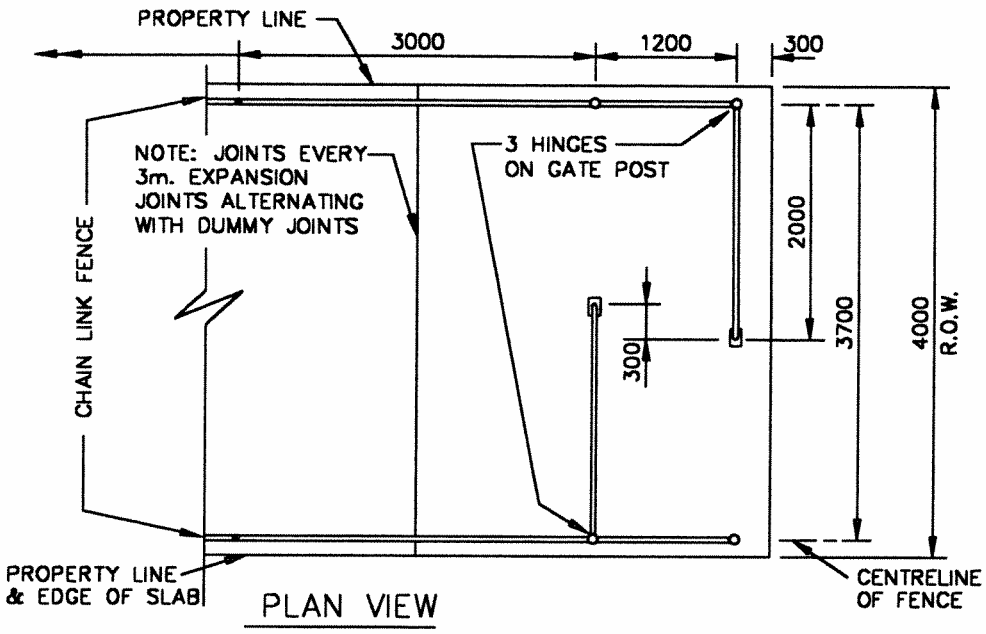
DISTRICT OF PORT HARDY

DATE APR / 98

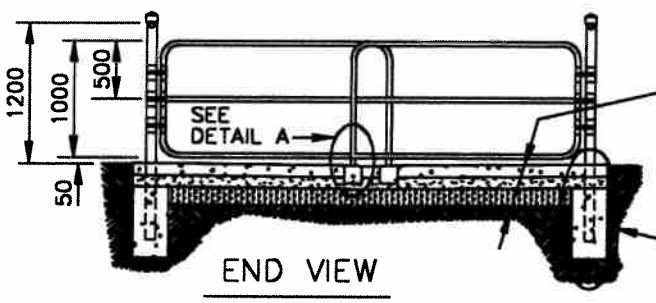
APPROVED

S.C.B.No. SCBE0003

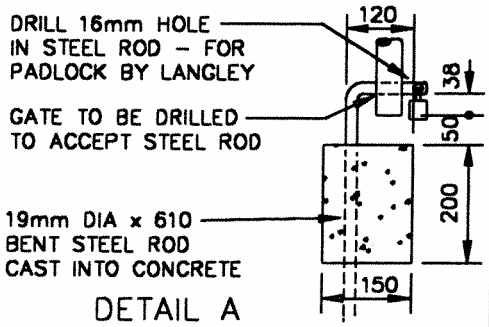
SDR 11



PLAN VIEW



END VIEW



DETAIL A

NOTES:
1. JOINTS TO BE WELDED AND GROUND SMOOTH
2. GATES TO BE GALVANIZED AFTER FABRICATION
3. SWALE AND CATCH BASINS TO BE PROVIDED FOR DRAINAGE AS PER STANDARD DRAWING C10
4. 1% MIN. LONGITUDINAL GRADE
5. ALL DIMENSIONS ARE IN MILLIMETRES

TITLE

EMERGENCY ACCESS

128

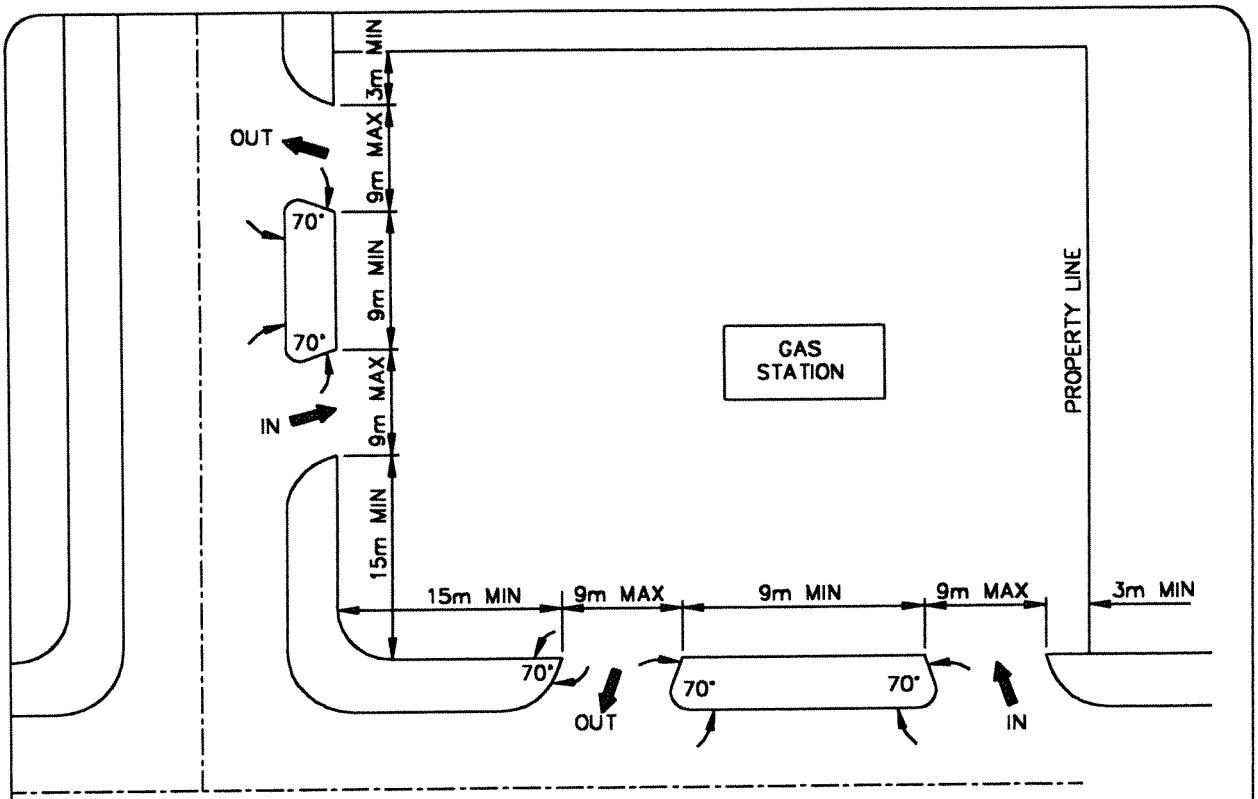
DISTRICT OF PORT HARDY

DATE APR / 98

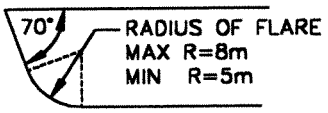
APPROVED

S.C.B.No. SCBE0015

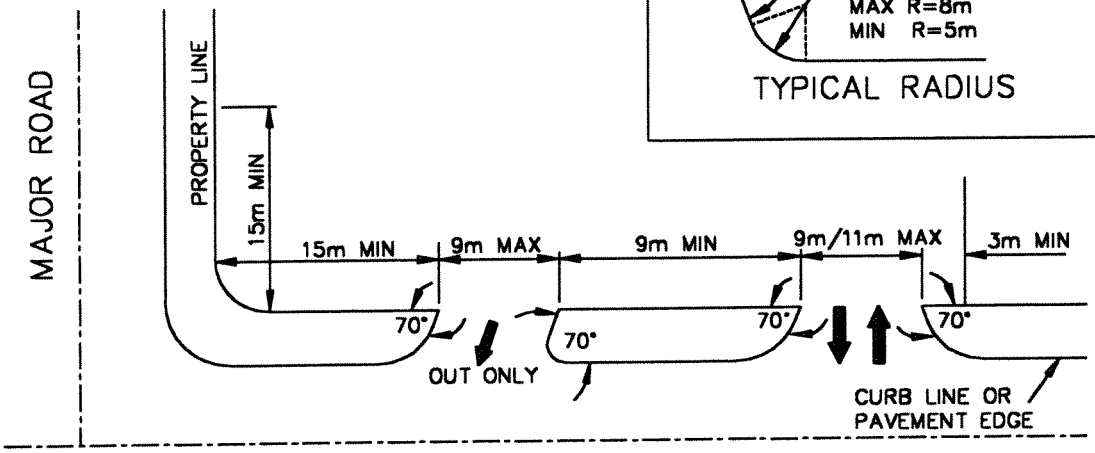
SDR 12



TYPICAL SERVICE STATION ENTRANCES



TYPICAL RADIUS



MINOR ROAD

TITLE

COMMERCIAL AND INDUSTRIAL PROPERTY
VEHICLE ENTRANCES

29

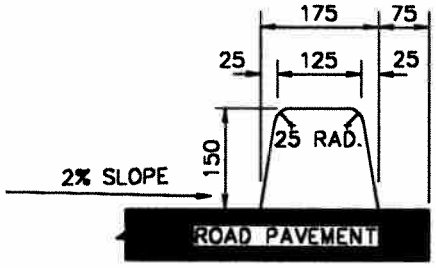
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

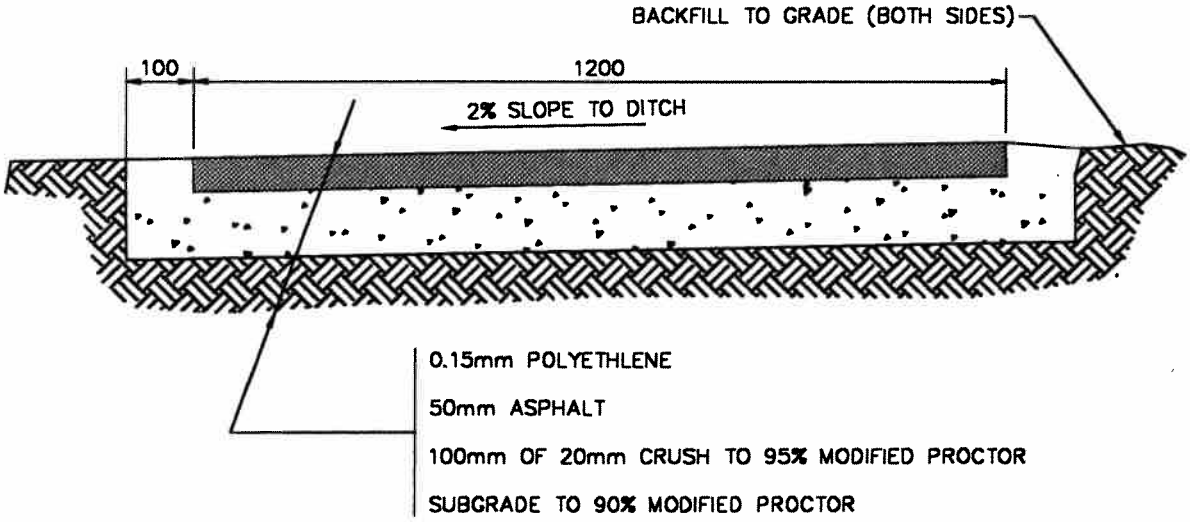
S.C.B.Mo. SCBE0016

SDR 13



USE ASPHALT TACK COAT TO BOND CURB TO ASPHALT

EXTRUDED CONCRETE CURB

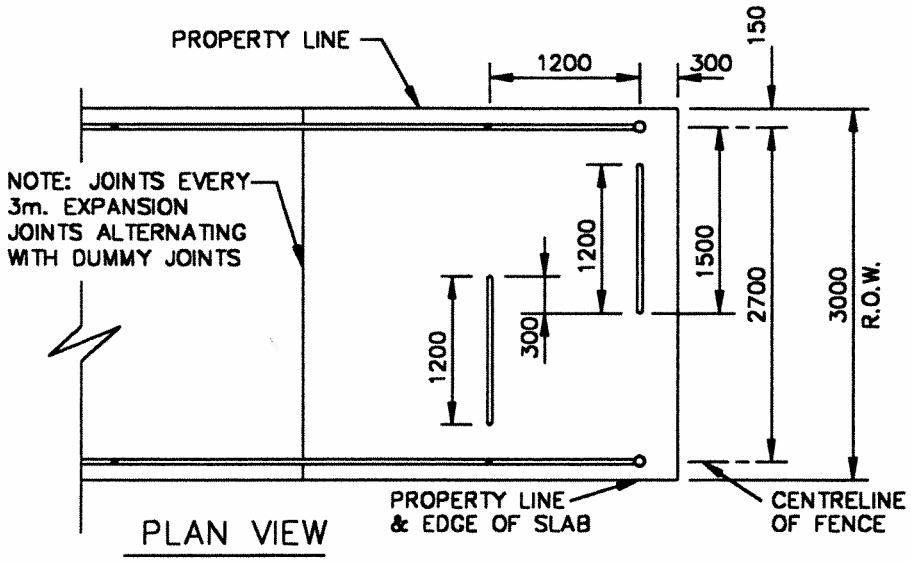


ASPHALT SIDEWALK

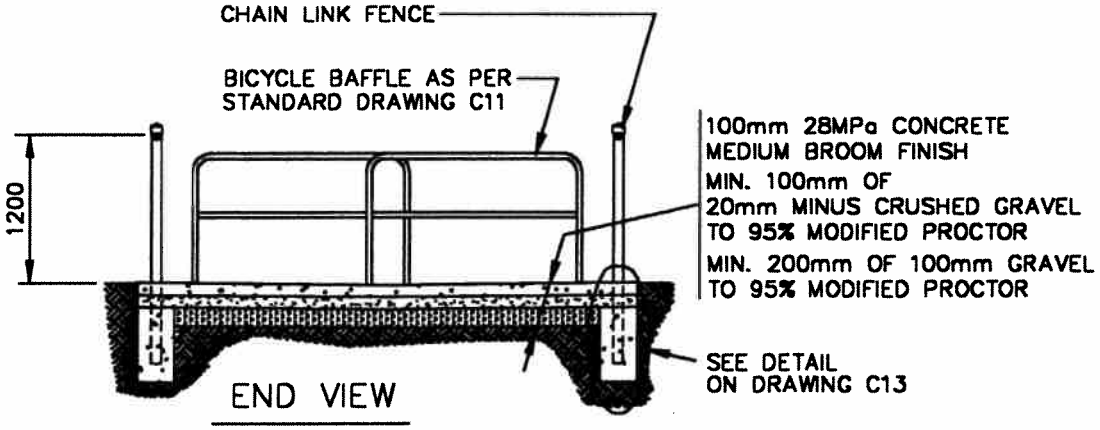
NOTE: 1.) REMOVE ALL VEGETATION AND TOPSOIL PRIOR TO INSTALLING BASE

2.) ALL DIMENSIONS ARE IN MILLIMETRES

TITLE: EXTRUDED CURB & ASPHALT SIDEWALK		130
DISTRICT OF PORT HARDY	DATE APR / 98 APPROVED S.C.B.No. SCBE0017	SDR 14



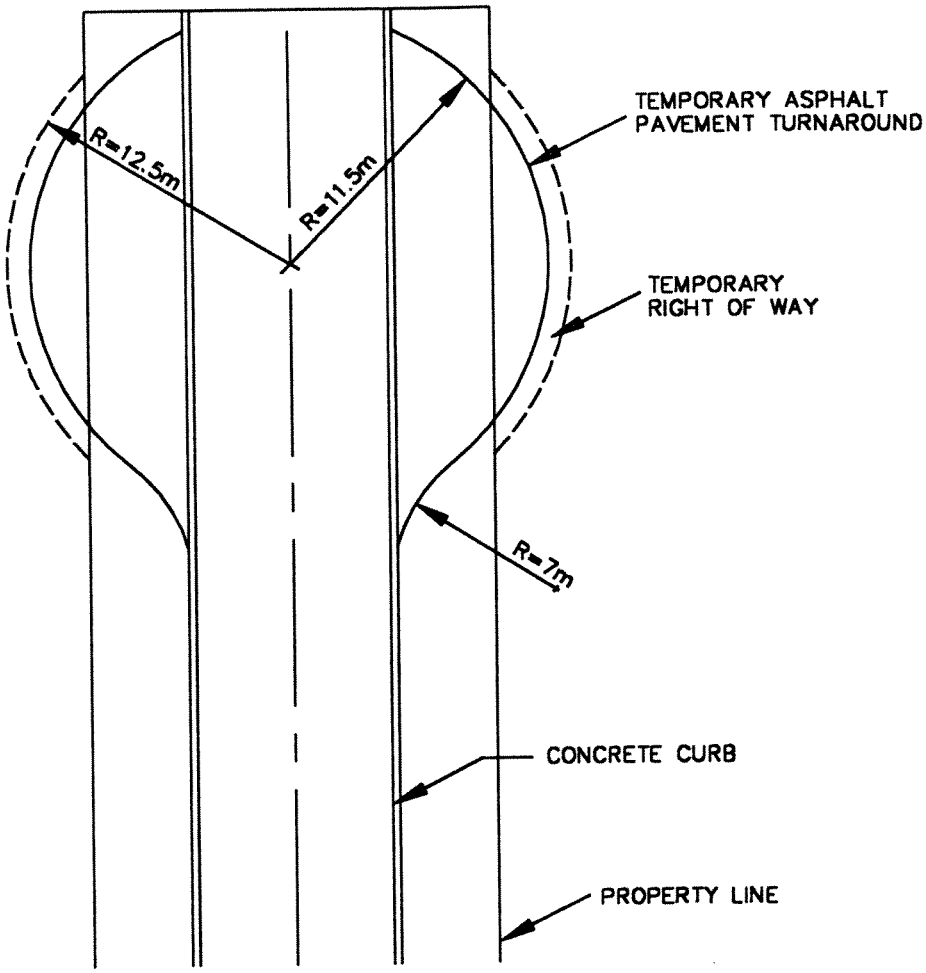
PLAN VIEW



END VIEW

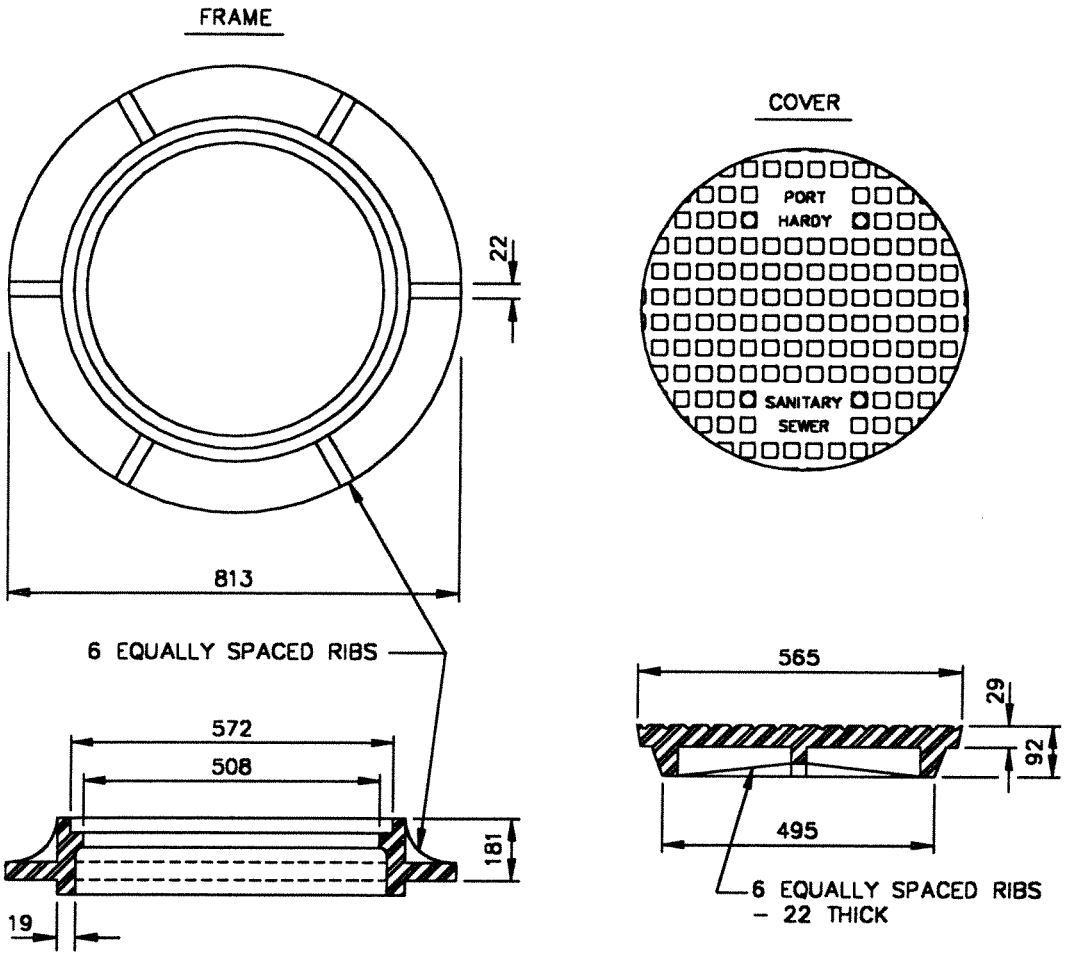
NOTES: 1. JOINTS TO BE WELDED AND GROUND SMOOTH
2. SWALE AND CATCH BASINS TO BE PROVIDED FOR DRAINAGE AS PER STANDARD DRAWING C10
3. 1% MIN. LONGITUDINAL GRADE
4. ALL DIMENSIONS ARE IN MILLIMETRES

TITLE: CONCRETE WALKWAY		131
DISTRICT OF PORT HARDY	DATE APR / 98 APPROVED S.C.E.Nos. SCBE0053	SDR 15



NOTES: 1) DEVELOPER TO SUPPLY A NON-REFUNDABLE DEPOSIT FOR REMOVAL & RESTORATION OF ADDITIONAL PAVEMENT REQUIRED FOR TURNAROUND.

TITLE TEMPORARY URBAN TURNAROUND		132
DISTRICT OF PORT HARDY	DATE APR / 98 APPROVED S.C.E.S.No. SCBE0057	SDR 16



MANHOLE FRAME AND COVER

NOTES:

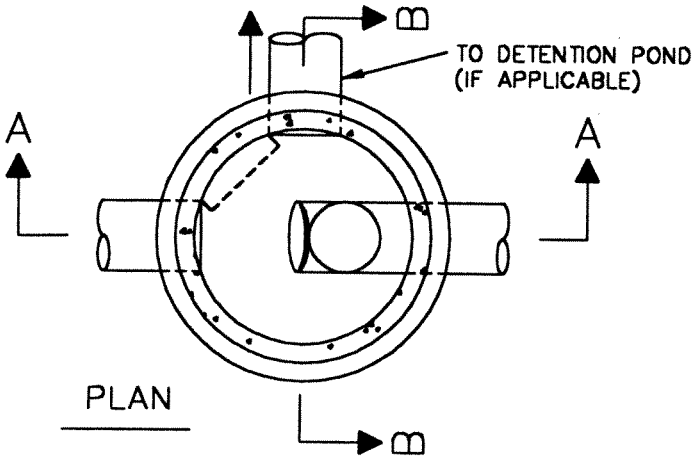
1.) LETTERING SHALL BE 25mm FLATTENED FACE GOTHIC LETTERING WITH FACE OF LETTERS AT THE SAME LEVEL AS THE TOP OF THE PATTERNS.

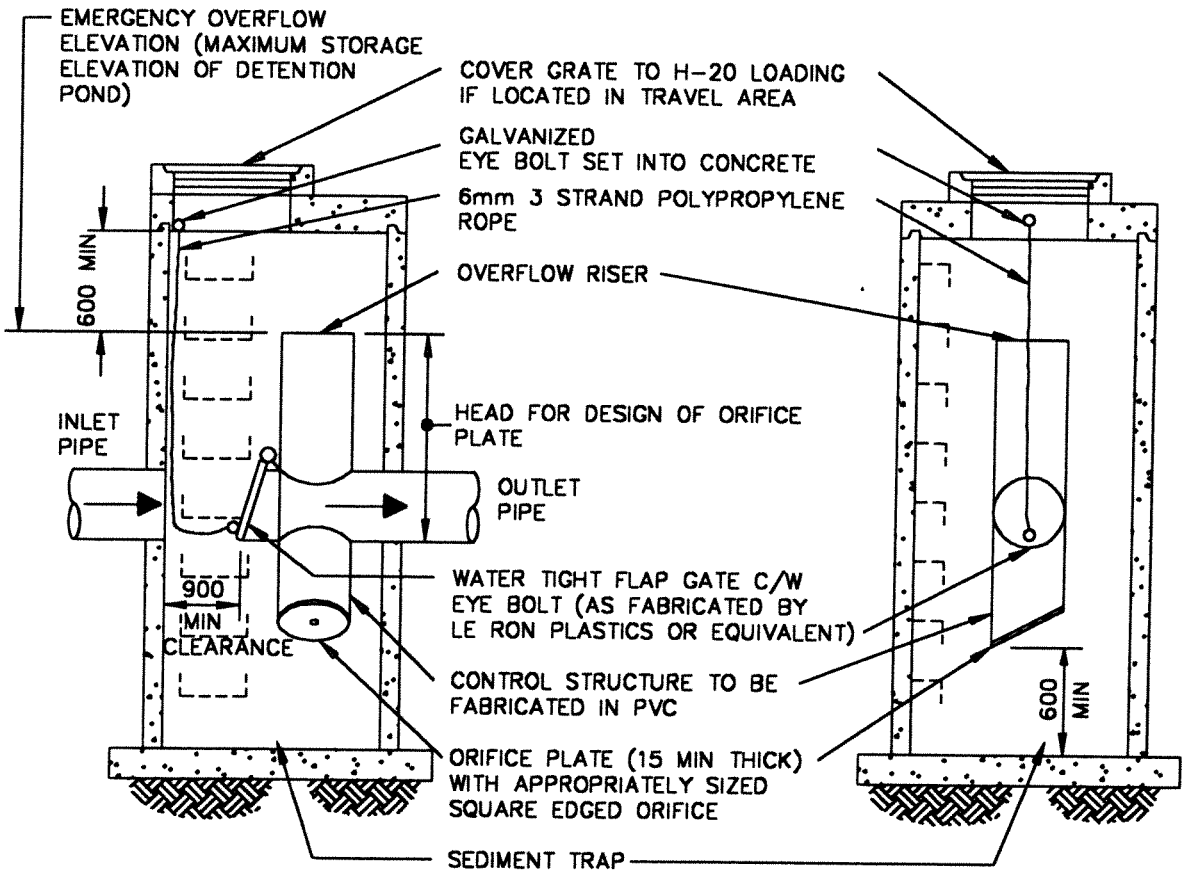
2.) SERVICE IDENTIFICATION TO BE "STORM SEWER", "SANITARY SEWER" OR "WATER" AS APPROPRIATE.

3.) BOTH FRAME AND COVER SHALL BE MACHINED FOR A NONROCKING FIT IN ALL POSITIONS.

4.) FRAME AND COVER TO BE APPROVED BY THE DIRECTOR OF ENGINEERING.

TITLE		
MANHOLE FRAME AND COVER		133
DISTRICT OF PORT HARDY	DATE APR / 98	SDD 1
	APPROVED	
	S.C.B.No. SCBE0022	





STANDARD 1800ø MANHOLE
SECTION A-A

STANDARD 1800ø MANHOLE
SECTION B-B

NOTE: ALL DIMENSIONS SHOWN IN MILLIMETRES UNLESS OTHERWISE STATED

TITLE

STORM FLOW CONTROL MANHOLE

134

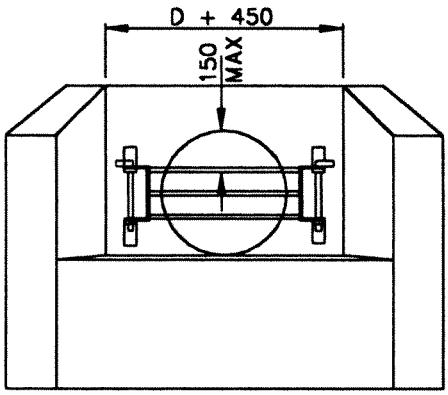
DISTRICT OF PORT HARDY

DATE APR / 98

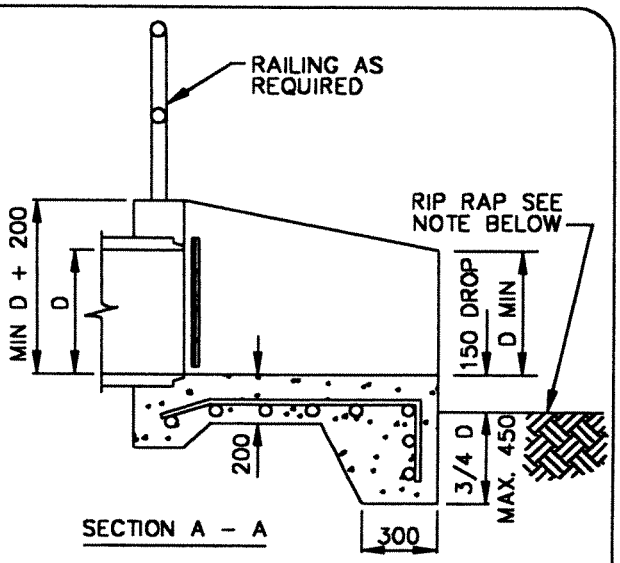
APPROVED

S.C.B.No. SCBE0010

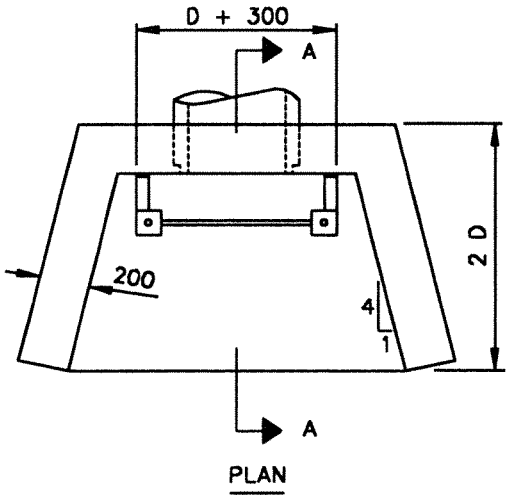
SDD 2



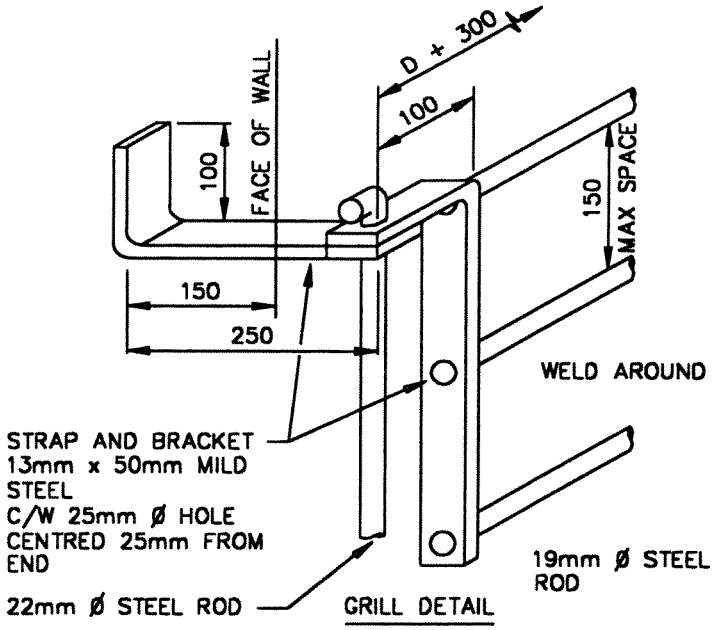
ELEVATION



SECTION A – A



PLAN



GRILL DETAIL

NOTES:
1. RIP RAP SUITABLY SIZED OR GABIONS C/W FILTER BED SHALL BE PLACED ON BOTTOM AND SIDES TO DESIGN WATER LEVEL AND DOWNSTREAM DISTANCE OF 1.5 TIMES THE DESIGN WATER VELOCITY (MINIMUM 1m).
2. PIPE SIZES LARGER THAN 1200mm ø, WATER VELOCITIES GREATER THAN 2.13m / sec OR WALLS HIGHER THAN 2m SHALL REQUIRE A SPECIAL DESIGN FOR THE STRUCTURE.
3. 10M REBAR AT 200mm BOTH WAYS AND CENTRED PLUS ONE 10M AROUND PIPE.
4. REBARS TO HAVE MINIMUM 50mm COVER.
5. CONCRETE TO BE 21 MPa AT 28 DAYS.
6. CHAMFER ALL EXPOSED CORNERS 25mm.
7. PLACE GRANULAR BACKFILL BEHIND WALL FOR DRAINAGE .
8. GRILLAGE NOT REQUIRED ON PIPE LESS THAN 450mm ø.
9. ALL GRILLAGE MATERIALS TO BE GALVANIZED.

TITLE

OUTLET STRUCTURE

135

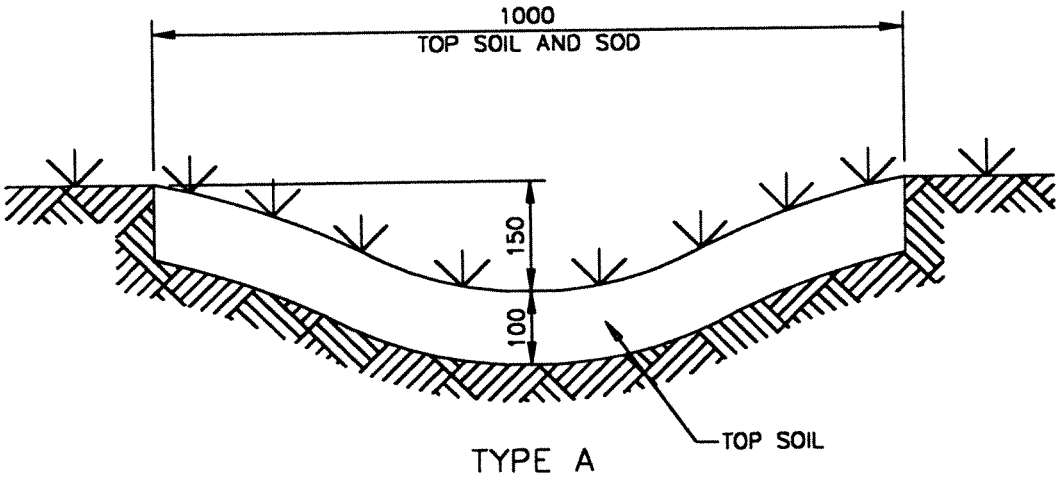
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

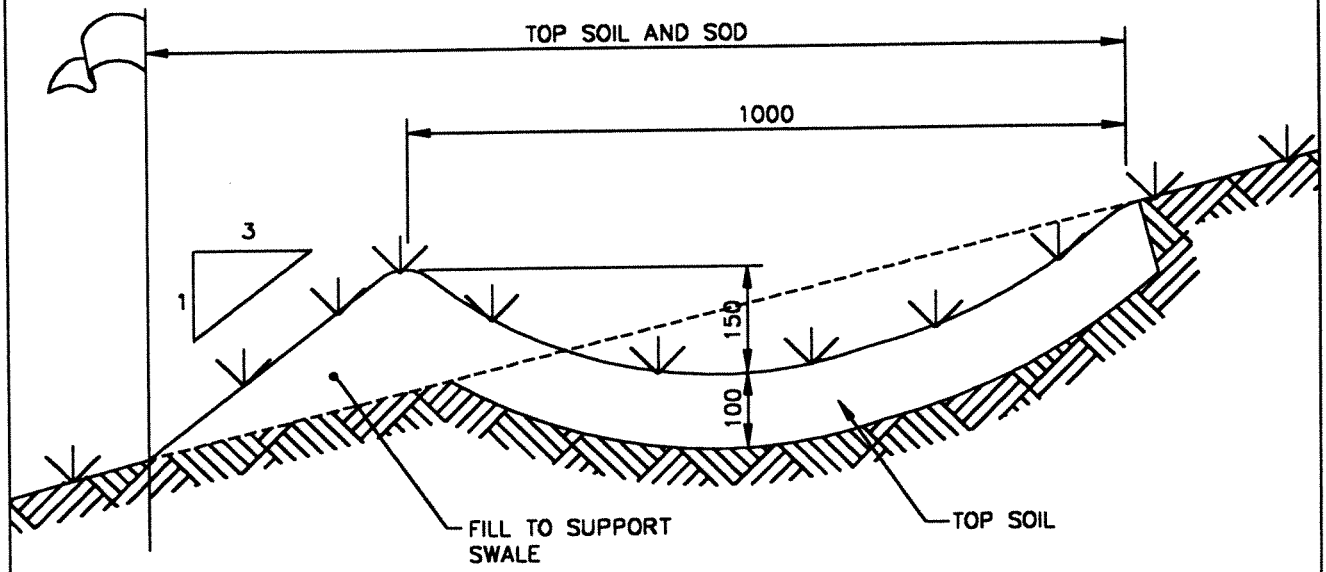
S.C.B.Inc. SCBE0023

SDD 3



TYPE A

NOTES:
1. SWALE TYPICALLY CENTRED ON EASEMENT



NOTES:
1. EASEMENT WIDTH AS REQUIRED TO SUPPORT PROPOSED SWALE

TYPE B

TITLE

SWALE

136

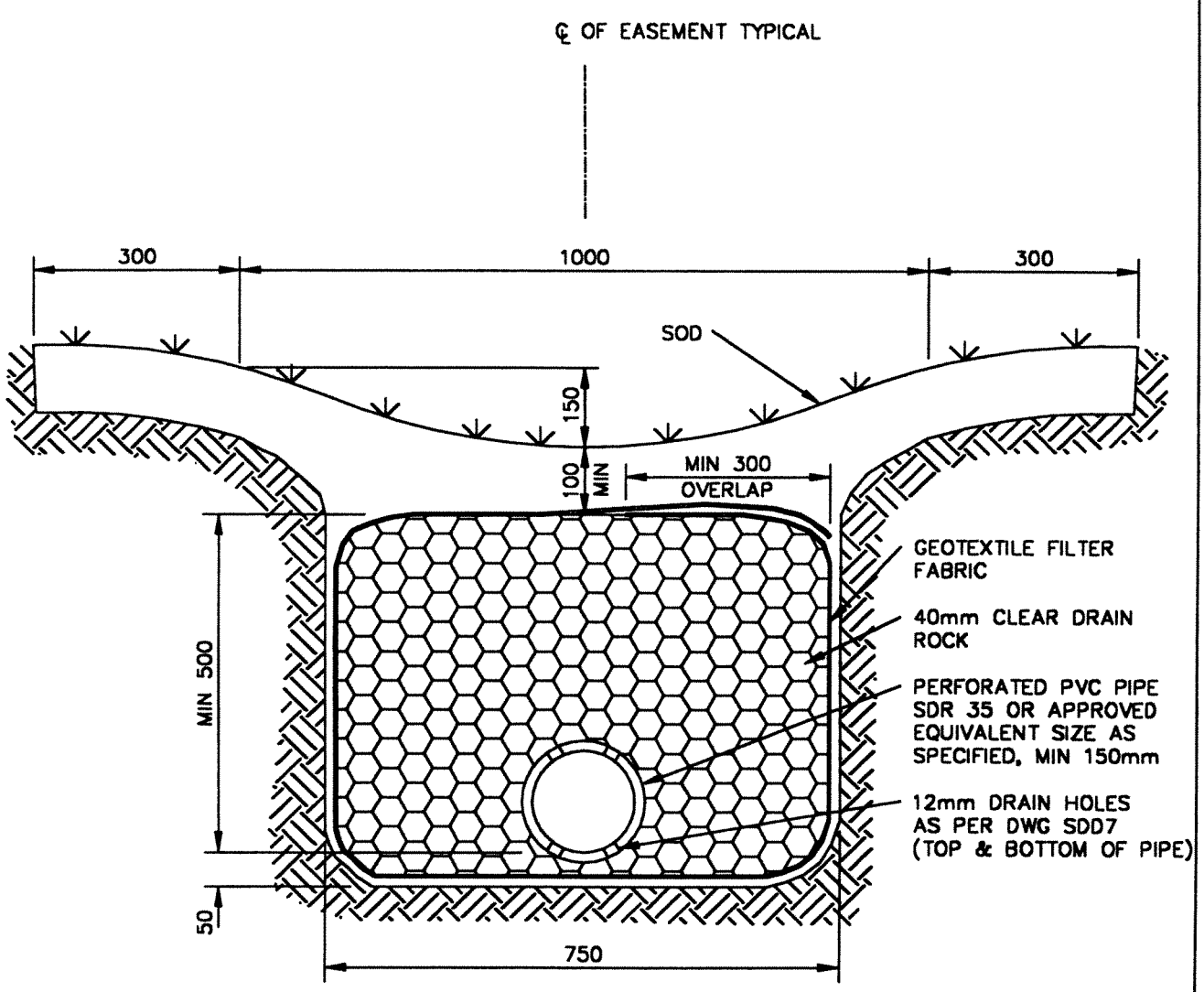
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0025

SDD 5



NOTES:
1.) SWALE TO BE CENTERED ON EASEMENT
2.) SOD TO BE PLACED ON MINIMUM 100mm TOPSOIL
3.) GEOTEXTILE FILTER FABRIC TO BE APPROVED BY MUNICIPAL ENGINEER

TITLE

FRENCH DRAIN

137

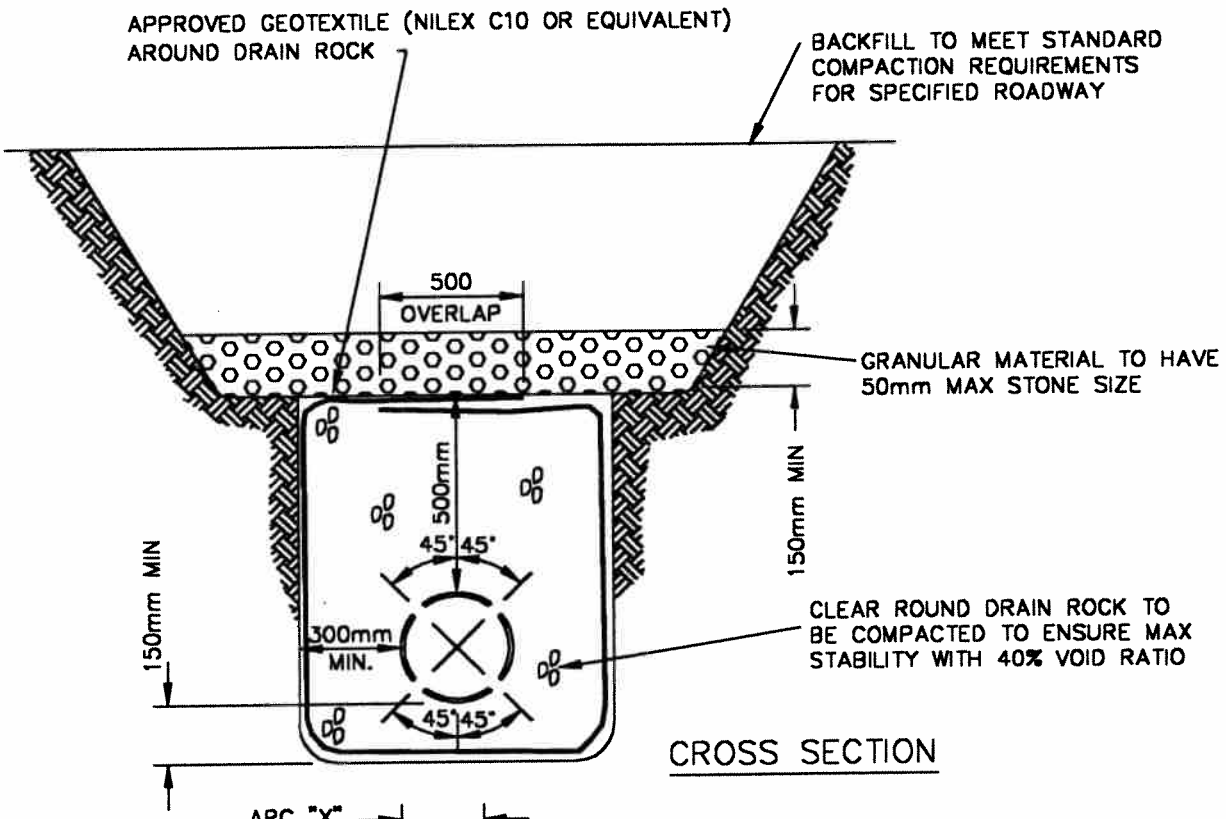
DISTRICT OF PORT HARDY

DATE APR / 98

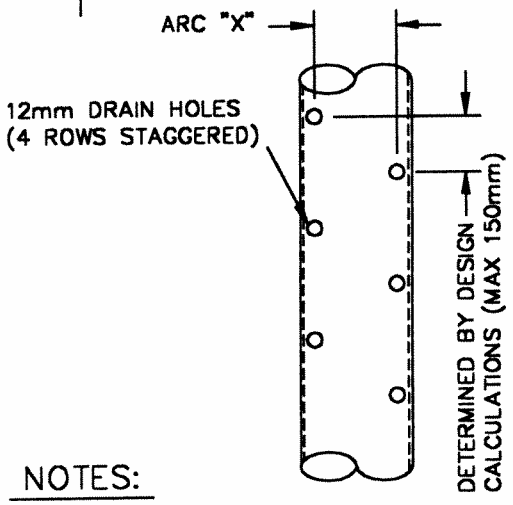
APPROVED

S.C.B.No. SCBE0026

SDD 6



CROSS SECTION



TOP OR
BOTTOM VIEW

NOTES:

1.) USE PERFORATED PVC PIPES.
2.) FIELD PERFORATION OF PIPE SHALL BE TO THIS STANDARD.
FACTORY PERFORATED PIPE MUST BE APPROVED BY THE MUNICIPAL ENGINEER.
3.) PROVIDE 0.5m MIN OVERLAP FOR LONGITUDINAL OR TRANSVERSE JOINTS
IN FABRIC.
4.) FILTER FABRIC TO BE APPROVED BY THE MUNICIPAL ENGINEER.
5.) CLEAR DRAIN ROCK TO BE SIZED 20mm
6.) ENSURE NO SILT OR CLAY LENS ADJACENT TO TRENCH WALL.

TITLE

EXFILTRATION TRENCH

138

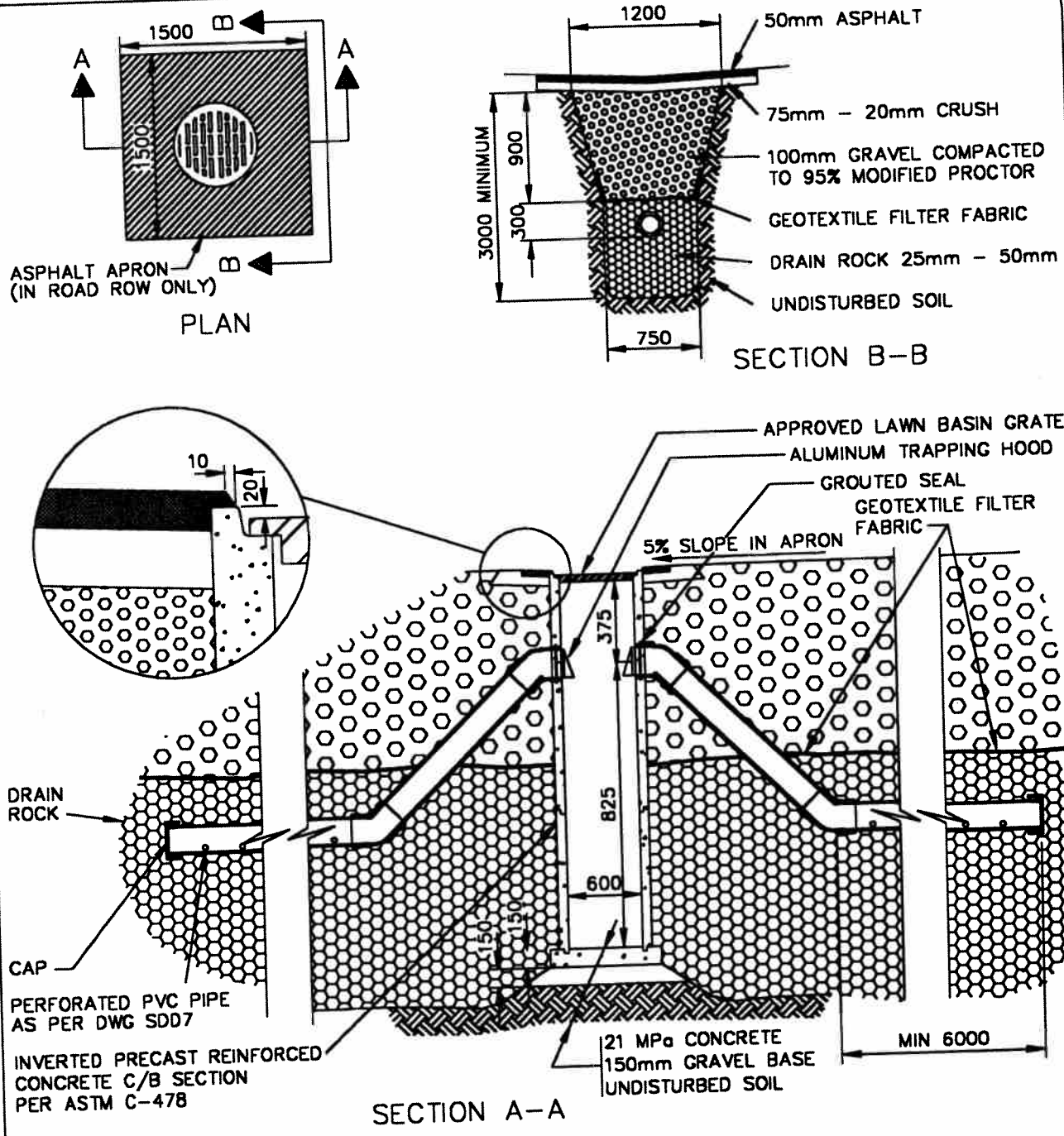
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0011

SDD 7



NOTES:
1.) DISCHARGE PIPES TO BE ALIGNED PARALLEL TO THE ROAD CENTRELINE.
2.) TRENCH DEPTH SHALL BE AS REQUIRED TO REACH A PERVIOUS UNDISTURBED SOIL.
3.) USE ROCK PIT ONLY WITH POSITIVE DRAINAGE OUTLET (ie AN OVERLAND ROUTE)

TITLE

ROCK PIT

139

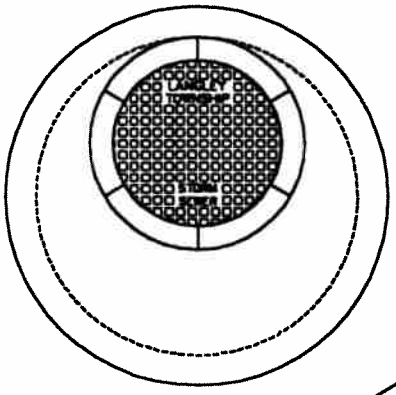
DISTRICT OF PORT HARDY

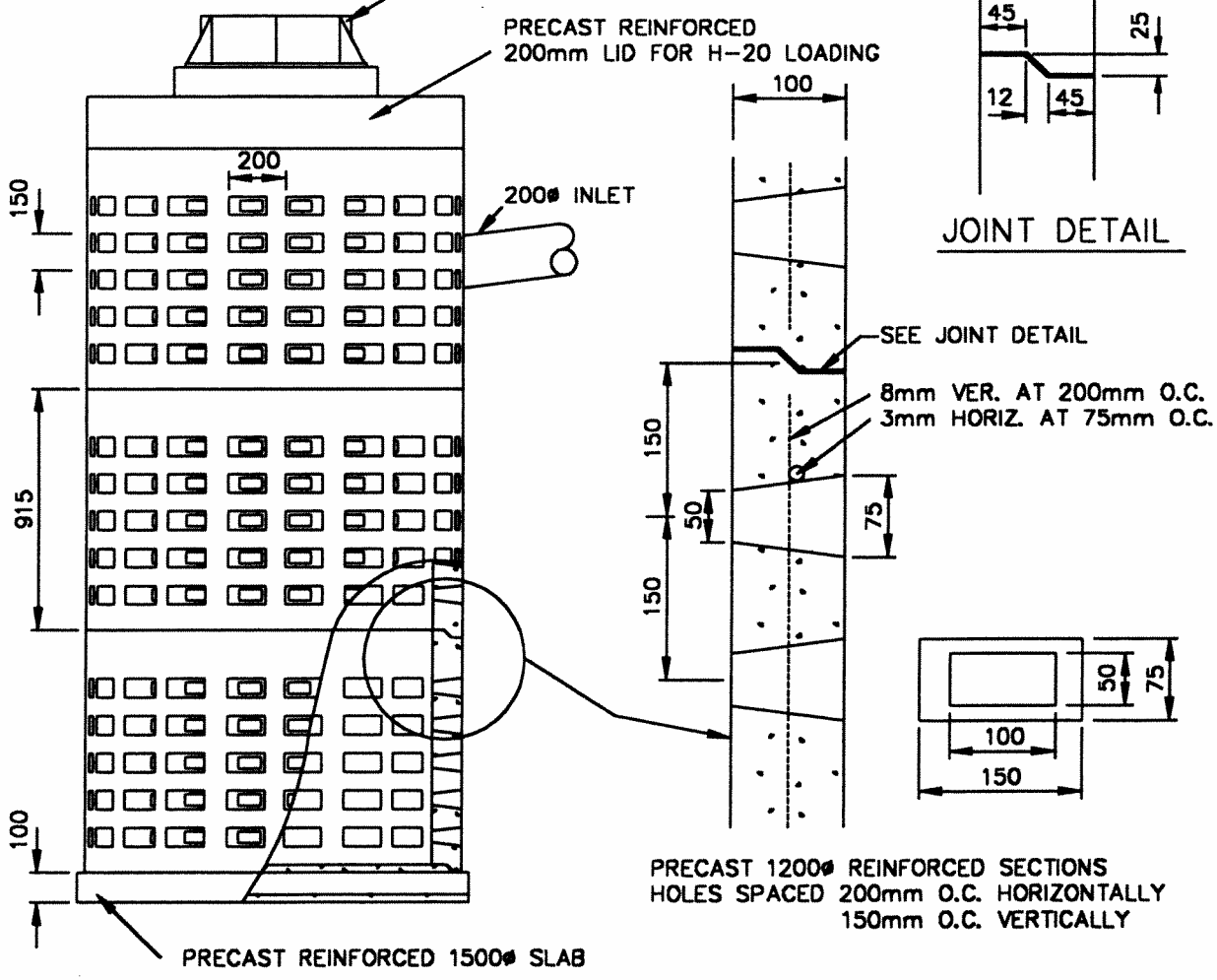
DATE APR / 98

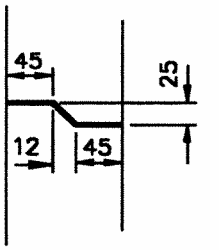
APPROVED

S.C.B.No. SCBE0027

SDD 8







JOINT DETAIL

NOTE: 1) RUNGS SHALL BE INSTALLED AS PER STANDARD MANHOLE

2) SEE SDD 10 FOR INSTALLATION DETAILS

TITLE

DRAINAGE DRYWELL

140

DISTRICT OF PORT HARDY

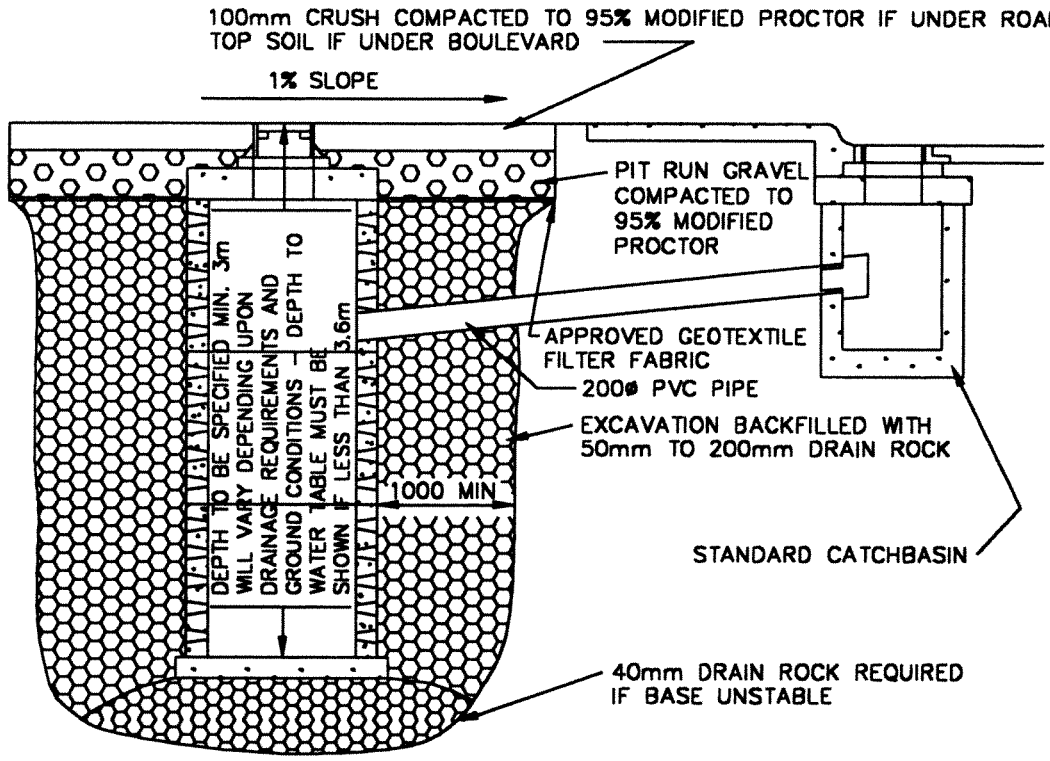
DATE APR / 98

APPROVED

S.C.S.No. SCBE0028

SDD 9

TYPICAL INSTALLATION



NOTE:

1.) THE NUMBER AND SPACING OF DRAINAGE DRYWELLS MUST BE DETERMINED IN ACCORDANCE WITH DRAINAGE DESIGN CALCULATIONS, AND WILL DEPEND UPON THE AREA DRAINED AND EXISTING GROUND CONDITIONS.

2.) FILTER FABRIC TO BE PLACED OVER TOP OF BARREL PRIOR TO PLACING COVERSLAB. ACCESS TO DRYWELL NOT TO BE CUT THROUGH FILTER FABRIC UNTIL FINAL INSPECTION.

3.) THE DRYWELL SHALL BE INSTALLED ON THE UPHILL SIDE OF THE RIGHT OF WAY.

4.) SEE SDD9 FOR DRYWELL DETAILS

TITLE

DRAINAGE DRYWELL INSTALLATION

141

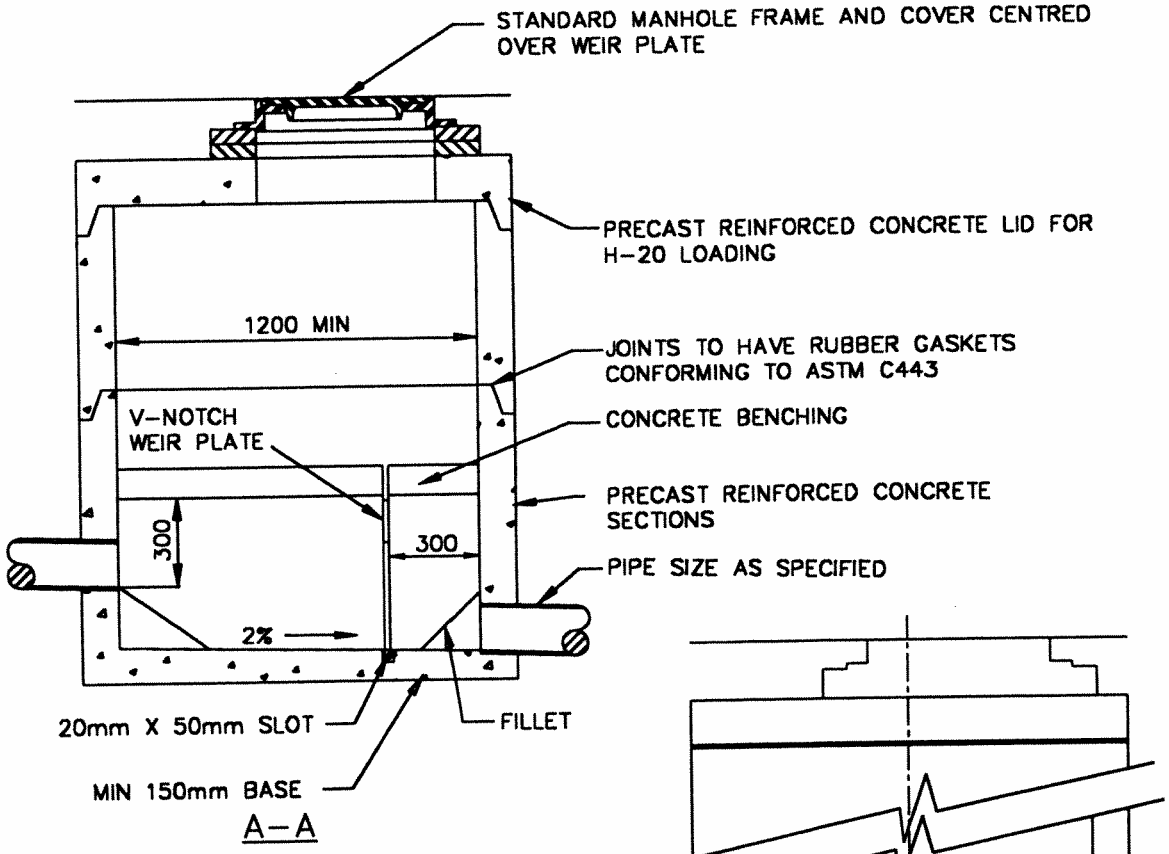
DISTRICT OF PORT HARDY

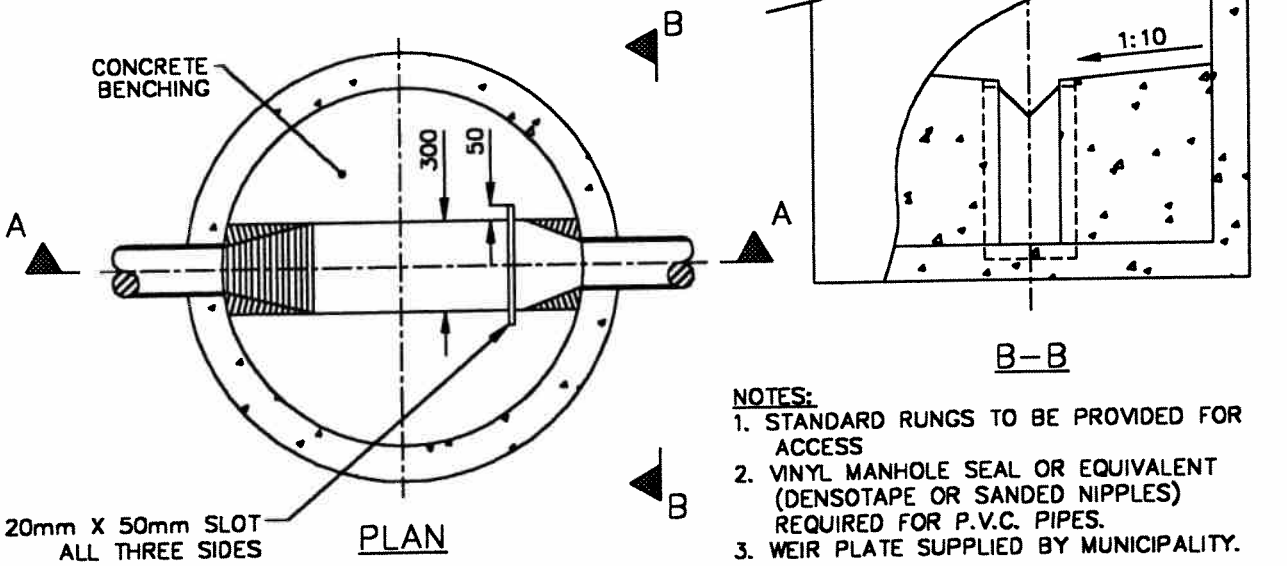
DATE APR / 98

APPROVED

S.C.E.S.No. SCBE0029

SDD 10





NOTES:
1. STANDARD RUNGS TO BE PROVIDED FOR ACCESS
2. VINYL MANHOLE SEAL OR EQUIVALENT (DENSOTAPE OR SANDED NIPPLES) REQUIRED FOR P.V.C. PIPES.
3. WEIR PLATE SUPPLIED BY MUNICIPALITY.

TITLE
SANITARY FLOW CONTROL MANHOLE

142

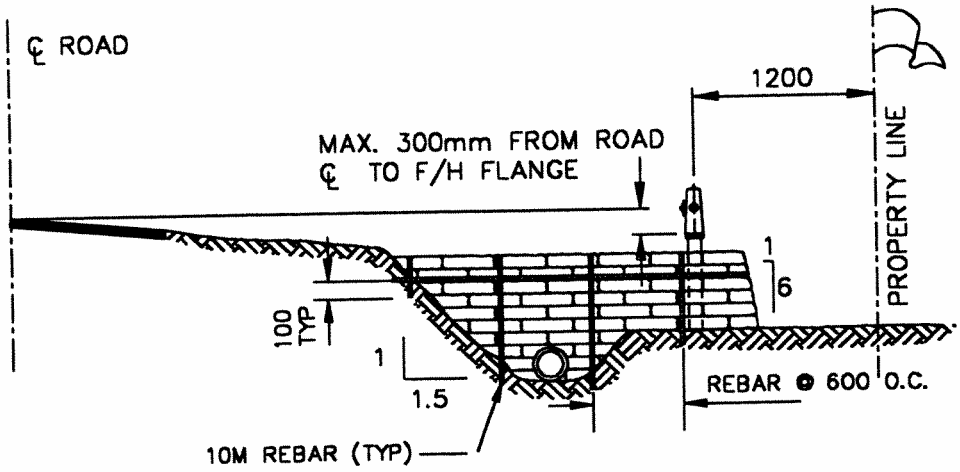
DISTRICT OF PORT HARDY

DATE APR / 98

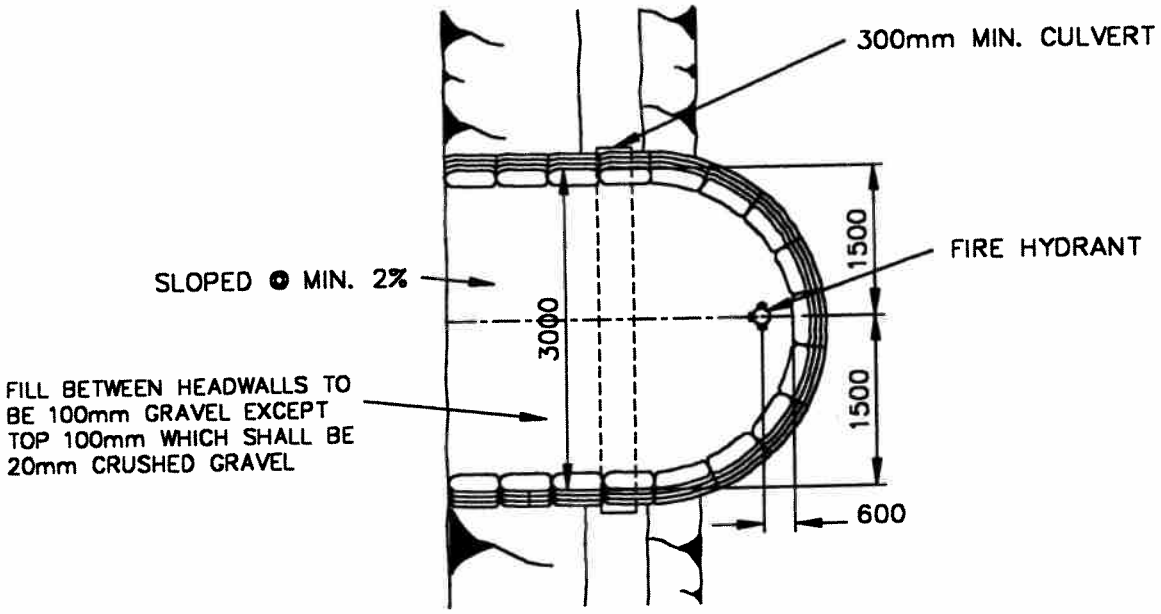
APPROVED

S.C.B.No. SCBE0030

SDS 1



CONSTRUCT HEADWALL WITH CONCRETE BAGS



NOTES:

1.) IN RURAL AREAS WHERE A HYDRANT IS REQUIRED IN A CUT, THE AREA AS SHOWN ABOVE SHALL BE RETAINED BY SUITABLE SIDESLOPES OR RETAINING WALLS.
2.) MINIMUM CULVERT LENGTH IS 4m.
3.) CONCRETE USED TO BE 21 MPa AT 28 DAYS.
4.) REINFORCING BARS TO HAVE MINIMUM 50mm COVER ON ALL SIDES AND ENDS.
6.) MAXIMUM HEADWALL HEIGHT 1.2m.

TITLE
RURAL FIRE HYDRANT ASSEMBLY

143

DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0031

SDW 1

WATERMAIN FITTING		SOIL BEARING CAPACITY AND MINIMUM THRUST BLOCK AREAS					
		SOFT CLAY	SAND	SAND & GRAVEL	SAND & GRAVEL WITH CLAY	SAND & GRAVEL CEMENTED WITH CLAY	HARDPAN
Diam. TYPE	THRUST	23.94 Kpa	47.88 Kpa	71.82 Kpa	95.76 Kpa	191.52 Kpa	239.40 Kpa
100mm Cap, Tee or Wye	11 kN	0.5 m2	0.3 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2
11 1/4 Bend	3 kN	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
22 1/2 Bend	5 kN	0.2 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
45 Bend	9 kN	0.4 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
90 Bend	16 kN	0.7 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
150mm Cap, Tee or Wye	1.1 kN	1.1 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
11 1/4 Bend	5 kN	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
22 1/2 Bend	10 kN	0.2 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
45 Bend	19 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
90 Bend	35 kN	1.5 m2	0.8 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
200mm Cap, Tee or Wye	44 kN	1.9 m2	1.0 m2	0.7 m2	0.5 m2	0.3 m2	0.2 m2
11 1/4 Bend	9 kN	0.4 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
22 1/2 Bend	17 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
45 Bend	34 kN	1.4 m2	0.7 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
90 Bend	62 kN	2.6 m2	1.3 m2	0.9 m2	1.1 m2	0.4 m2	0.3 m2
250mm Cap, Tee or Wye	68 kN	2.9 m2	1.5 m2	1.0 m2	0.8 m2	0.4 m2	0.3 m2
11 1/4 Bend	14 kN	0.6 m2	0.3 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2
22 1/2 Bend	27 kN	1.2 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
45 Bend	52 kN	2.2 m2	1.1 m2	0.8 m2	0.6 m2	0.3 m2	0.3 m2
90 Bend	96 kN	4.1 m2	2.1 m2	1.4 m2	1.1 m2	0.6 m2	0.5 m2
300mm Cap, Tee or Wye	98 kN	4.1 m2	2.1 m2	1.4 m2	1.1 m2	0.6 m2	0.5 m2
11 1/4 Bend	20 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
22 1/2 Bend	39 kN	1.6 m2	0.8 m2	0.6 m2	0.4 m2	0.2 m2	0.2 m2
45 Bend	75 kN	3.2 m2	1.6 m2	1.1 m2	0.8 m2	0.4 m2	0.4 m2
90 Bend	138 kN	5.8 m2	2.9 m2	2.0 m2	1.5 m2	0.8 m2	0.6 m2
350mm Cap, Tee or Wye	133 kN	5.6 m2	2.8 m2	1.9 m2	1.4 m2	0.7 m2	0.6 m2
11 1/4 Bend	27 kN	1.1 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
22 1/2 Bend	52 kN	2.2 m2	1.1 m2	0.8 m2	0.6 m2	0.3 m2	0.3 m2
45 Bend	102 kN	4.3 m2	2.2 m2	1.5 m2	1.1 m2	0.6 m2	0.5 m2
90 Bend	188 kN	7.9 m2	4.0 m2	2.7 m2	2.0 m2	1.0 m2	0.8 m2
400mm Cap, Tee or Wye	174 kN	7.3 m2	3.7 m2	2.5 m2	1.9 m2	1.0 m2	0.8 m2
11 1/4 Bend	34 kN	1.5 m2	0.8 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
22 1/2 Bend	68 kN	2.9 m2	1.5 m2	1.0 m2	0.8 m2	0.4 m2	0.3 m2
45 Bend	133 kN	5.6 m2	2.8 m2	1.9 m2	1.4 m2	0.7 m2	0.6 m2
90 Bend	246 kN	10.3 m2	5.2 m2	3.5 m2	2.6 m2	1.3 m2	1.1 m2

Note: 1) SOIL BEARING STRENGTHS ARE APPROXIMATE ONLY AND SHALL BE VERIFIED BY FIELD INVESTIGATIONS

2) THRUST AND BEARING AREAS ARE BASED ON A TEST PRESSURE OF 1380 KPa (200 Psi)

TITLE

WATERMAIN FITTING
MINIMUM THRUST BLOCK AREA

144

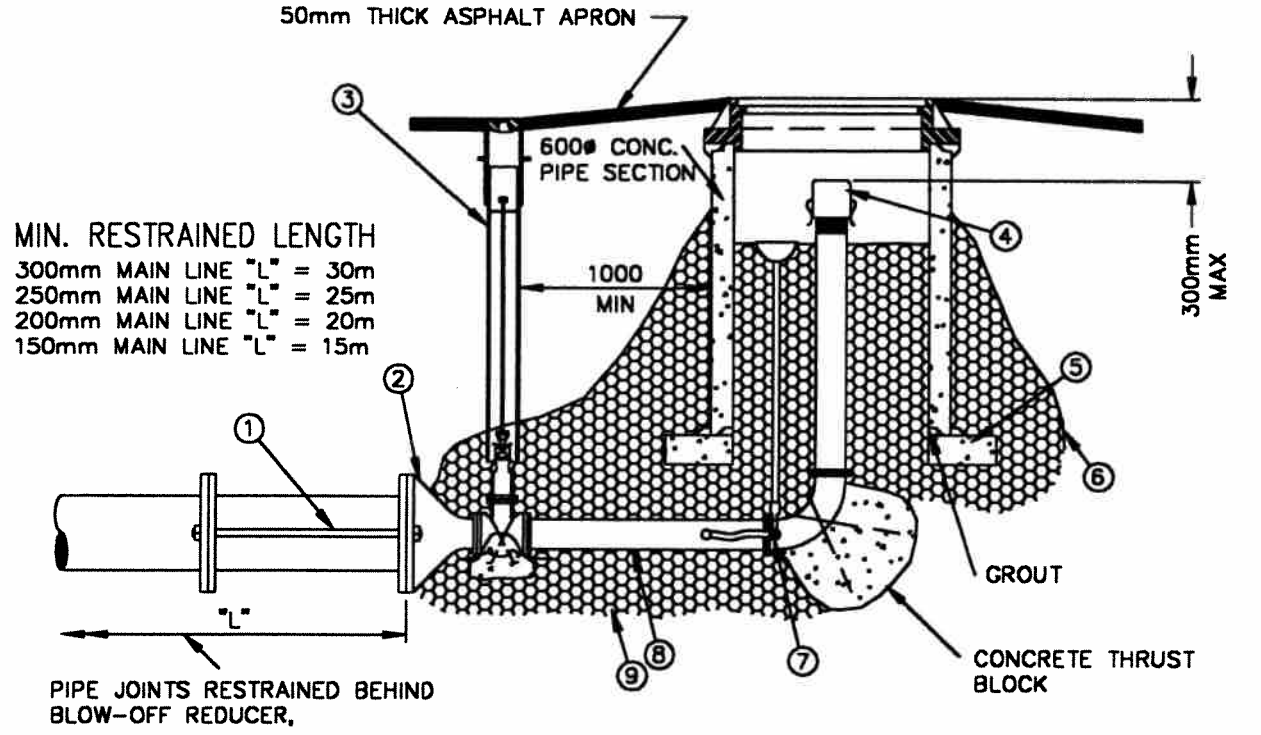
DISTRICT OF PORT HARDY

DATE APR / 98

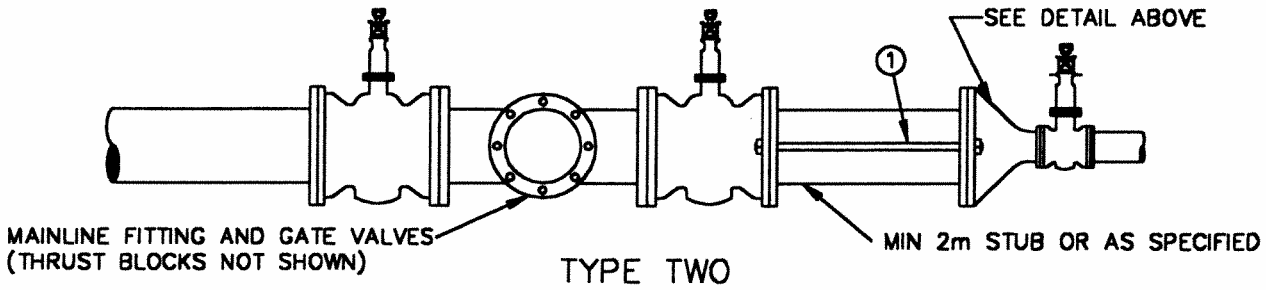
APPROVED

S.C.B.No. SCBE0055

SDW 3



TYPE ONE (DEAD END)



TYPE TWO

1.) 19mm TIE-RODS (OR AS SPECIFIED)
2.) HUB x FLANGE REDUCER
3.) 100mm F x F GATE VALVE AND VALVE BOX
4.) 100mm CAM-LOCK CONNECTOR AND CAP
5.) PRECAST CONCRETE MANHOLE RISER RING
6.) 6 MIL POLY OVER DRAIN ROCK
7.) 19mm CURB STOP AND BURY BOX, CONNECT TO BLOW OFF WITH THREADED COMPRESSION COUPLING AND 19mm POLY TUBE.
8.) 100mm ø GALVANIZED SCH. 40 STEEL PIPE (TYP)
9.) DRAIN ROCK - 20mm TO 50mm BROKEN STONE

NOTE: 1.) INSTALLATION TO BE INSPECTED BY THE MUNICIPAL INSPECTOR PRIOR TO BACK FILLING
2.) SPECIAL DESIGN REQUIRED FOR MAIN LINE PIPE LARGER THAN 300mm ø.

TITLE

WATERMAIN BLOW-OFF

145

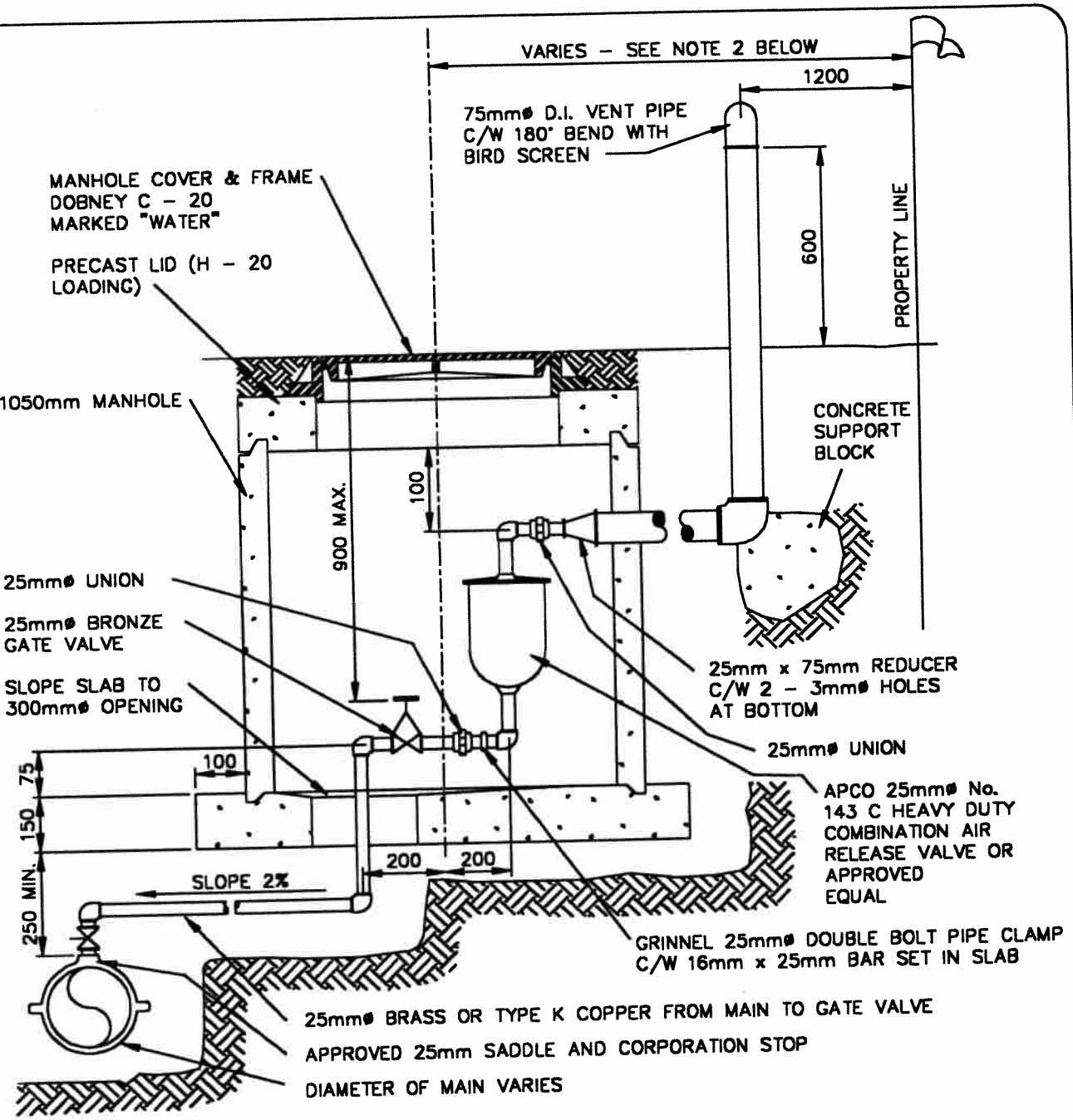
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.No. SCBE0054

SDW 4



NOTES: 1.) SPECIAL DESIGN REQUIRED WHEN DISTANCE FROM TOP OF MAIN TO MANHOLE COVER IS LESS THAN 1.2m.

2.) MANHOLE TO BE CENTERED 525mm FROM BACK OF SIDEWALK WHERE SIDEWALK IS ON THE SAME SIDE OF ROAD AS WATERMAIN OTHERWISE LOCATE IN BOULEVARD CENTRED AT 3m FROM PROPERTY LINE IN URBAN AREAS OR 4m FROM PROPERTY LINE IN RURAL AREAS C/W ACCESS PAD AND APPROVED CULVERT WHERE REQUIRED.

TITLE

AIR AND VACUUM VALVE CHAMBER

146

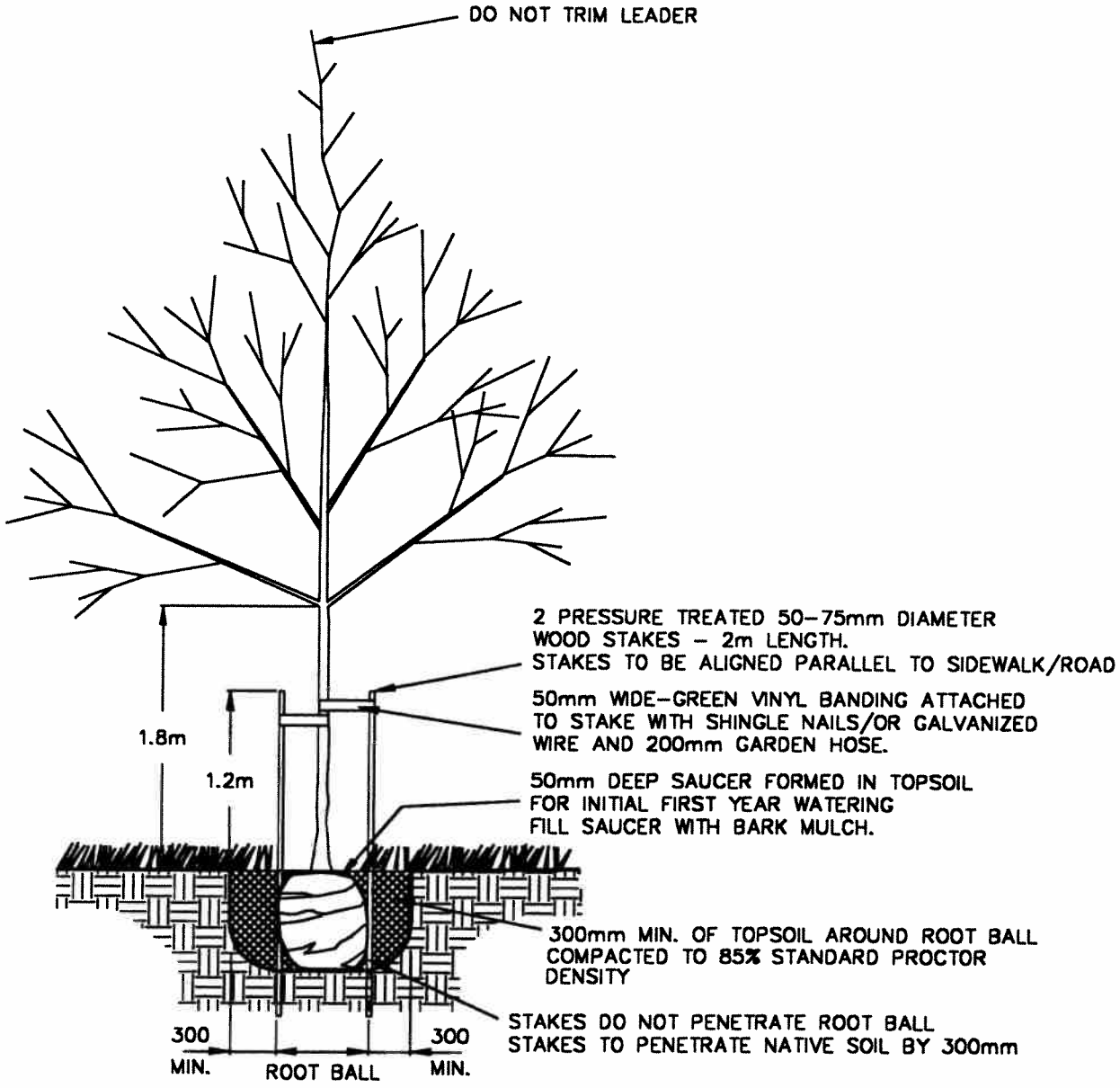
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.E.Ref. SCBE0056

SDW 5



NOTES

1) SACKING/BURLAP TO BE LOOSENED AND DROPPED TO THE BOTTOM OF THE PLANTING HOLE. ALL STRING, TWINE, ETC. TO BE REMOVED.

2) ALL WIRE BASKETS SHALL HAVE THE TOP 1/3 OF THE WIRE REMOVED PRIOR TO PLANTING.

3) ALL TREES SHALL BE SINGLE STEMMED.

TITLE

TREE PLANTING DETAIL

147

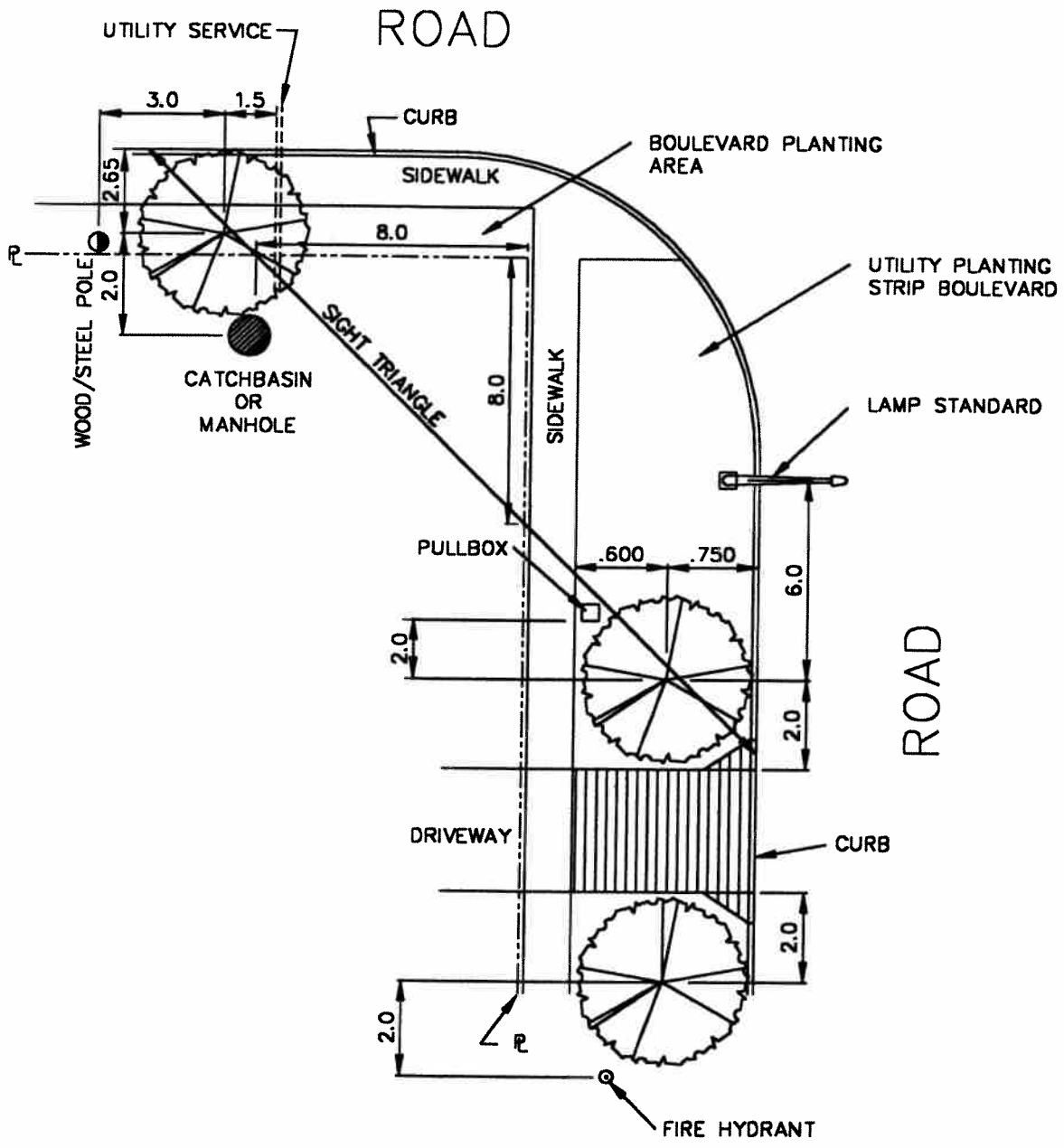
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.E.D. SCBE0033

SDT 1



TITLE

MINIMUM TREE PLANTING DISTANCES

148

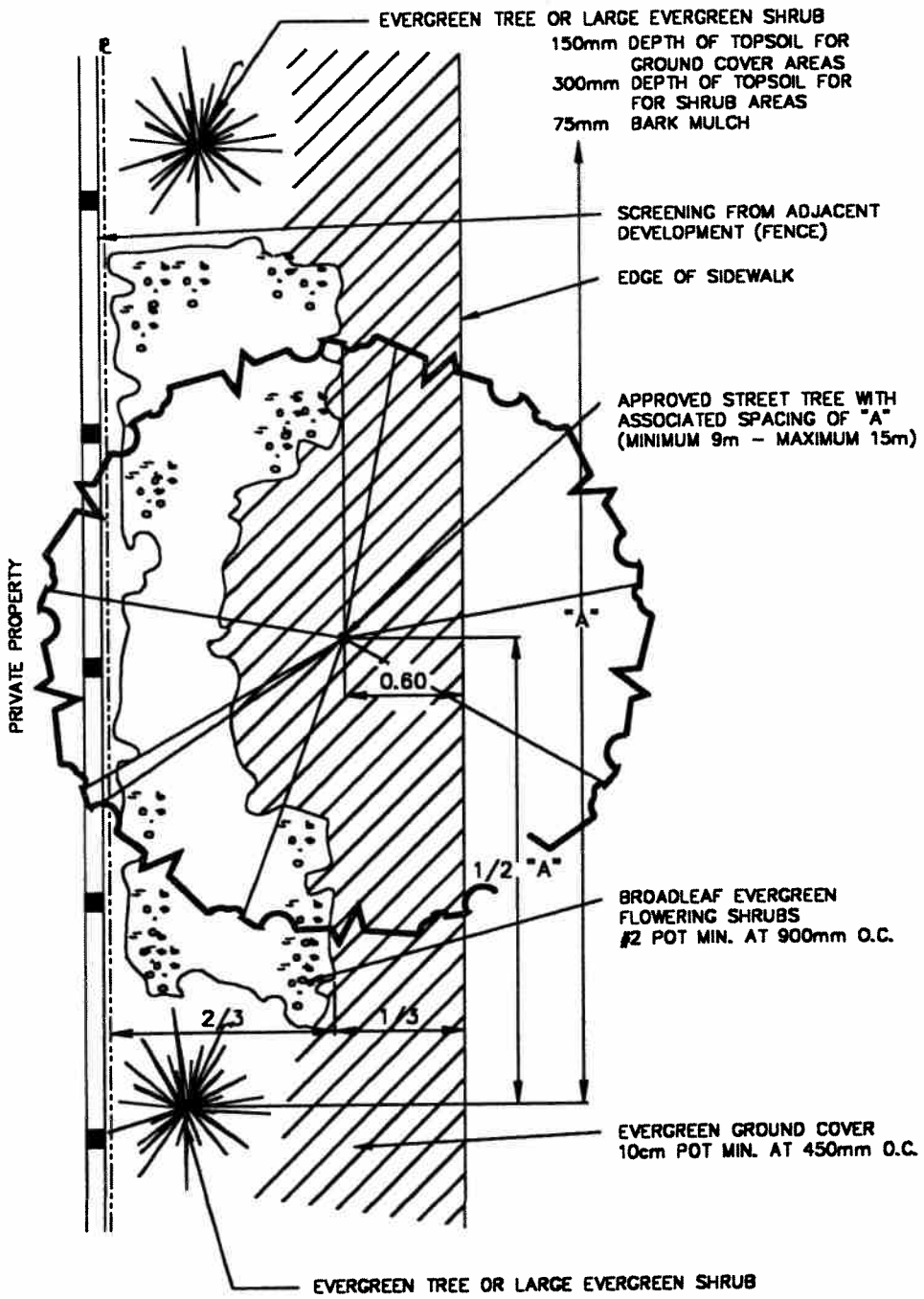
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.E.Ltd. SCBE0034

SDT 2



TITLE

BOULEVARD PLANTING SEQUENCE
SLOPES UNDER 1:4

149

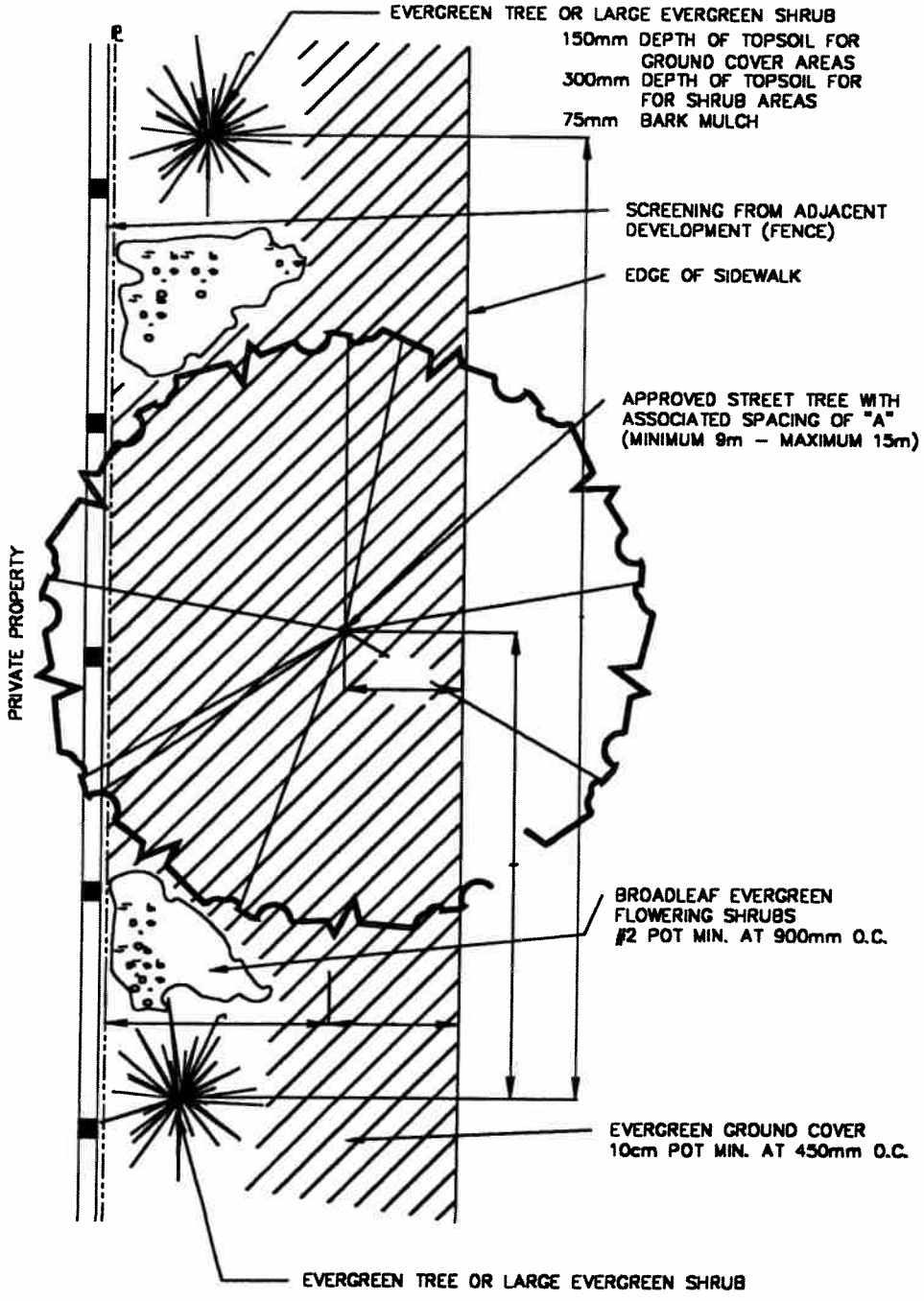
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.S.No. SCBE0035

SDT 3



TITLE

BOULEVARD PLANTING SEQUENCE
SLOPES OVER 1:4

150

DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.B.Dis. SCBE0036

SDT 4

CONCRETE BASE INDEX

TYPE	DRAWING	POLE TYPES
–	SDE–2	7.5m AND 9.0m SINGLE UNIT DAVIT LUMINAIRE POLES & TYPE 4, 4A AND 5 SIGNAL POSTS & 4.0m, 6.0m AND 7.5m POST TOP LUMINAIRE POLES
A	E 1.2	TYPE 4 SIGNAL POST
B	E 1.2	TYPE 4A AND 5 SIGNAL POST & 4.0m, 6.0m AND 7.5m POST TOP LUMINAIRE POLES
C	E 1.3 & E 1.4	11.0m DAVIT LUMINAIRE POLE
C1	E 1.3 & E 1.4	6.6m AND 8.1m SINGLE UNIT DAVIT LUMINAIRE POLES & 6.6m , 8.1m AND 10.1m LUMINAIRE POLES & 3.1m, 5.1m AND 6.6m POST TOP LUMINAIRE POLES ON 0.9m HIGH SERVICE BASE
E2	E 1.5 & E 1.6	TYPE 1 AND 3 SIGNAL POLES
F	E 1.7 & E 1.8	TYPE 6 AND 7 SIGNAL POLES
L	E 1.12	POST MOUNTED FLASHER CONCRETE BASE

NOTES: 1.) REFER TO CONTRACT DRAWINGS AND SECTION 16650 FOR DETAILED SPECIFICATIONS.

TITLE CONCRETE BASE INDEX

151

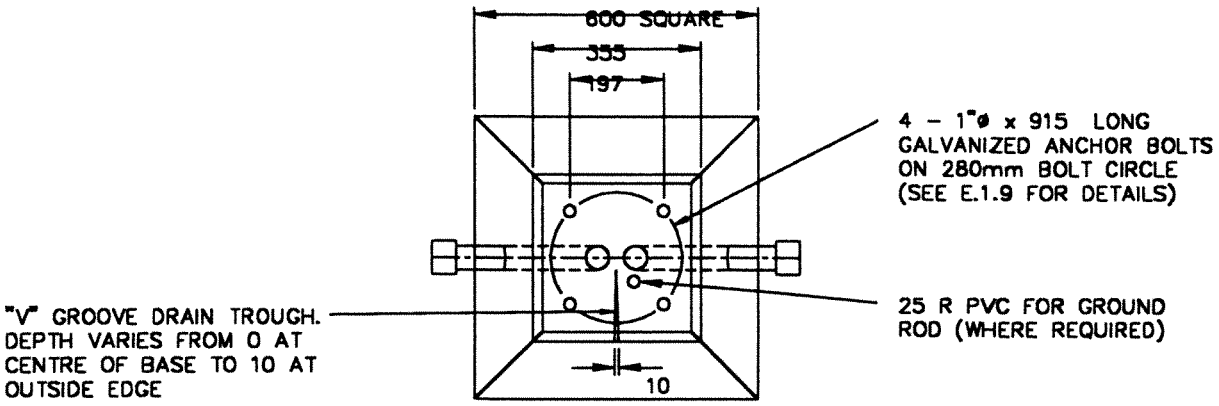
DISTRICT OF PORT HARDY

DATE APR / 98

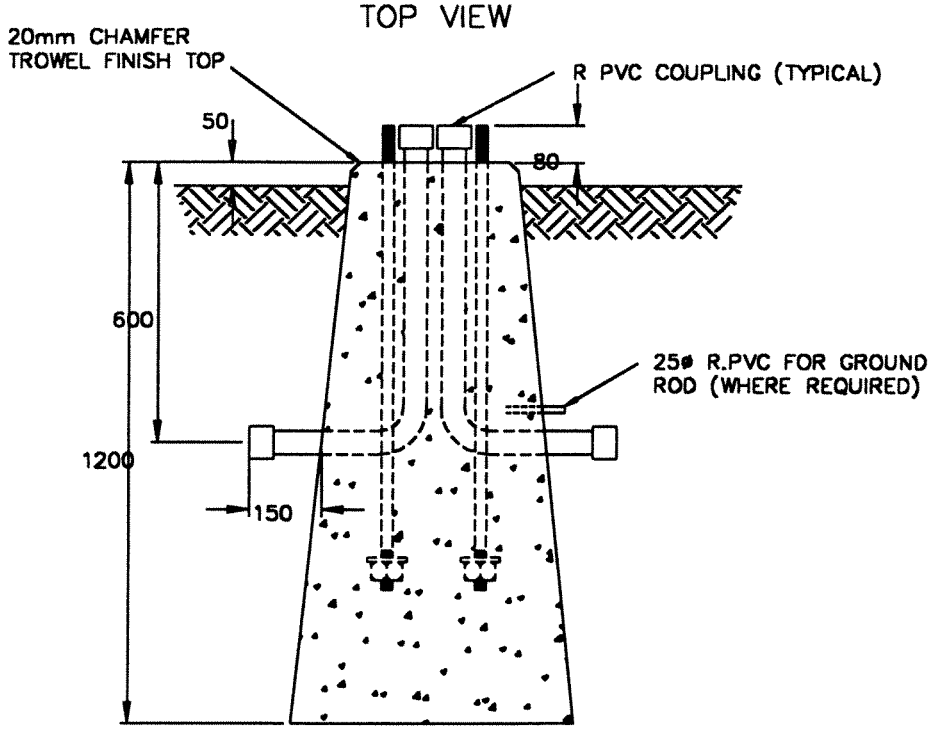
APPROVED

S.C.B.No. SCBE0064

SDE1



TOP VIEW



SIDE VIEW

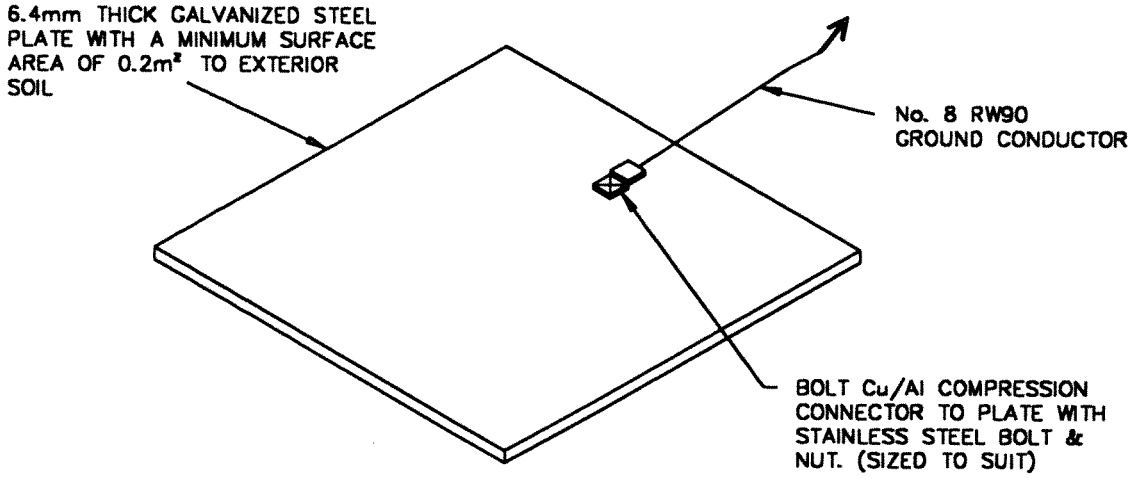
NOTES:

1.) REFER TO CONTRACT DRAWINGS AND SECTION 16650 FOR DETAILED SPECIFICATIONS.

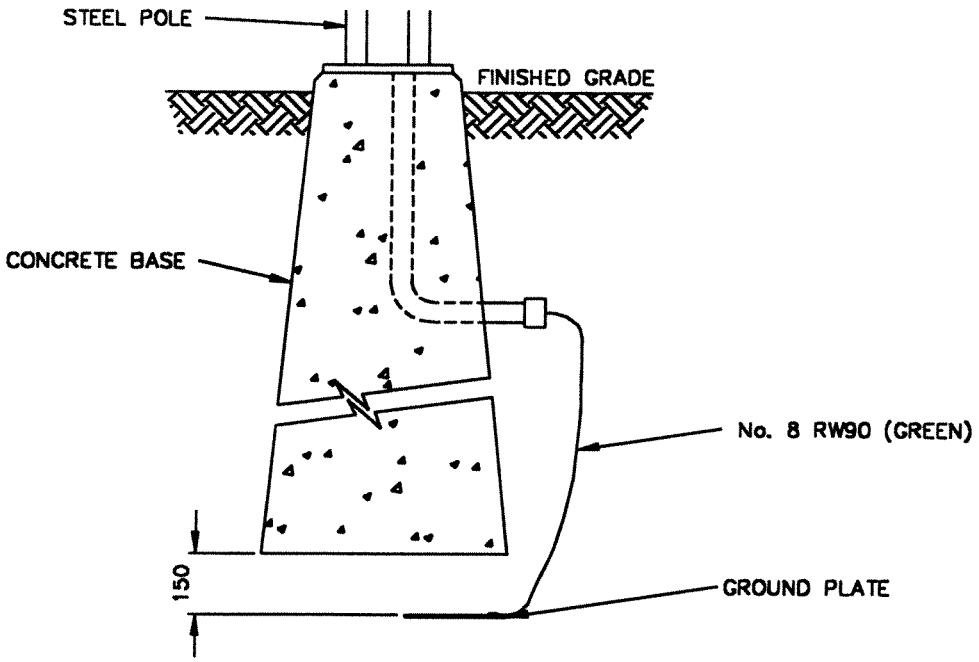
2.) CONCRETE SHALL HAVE ATTAINED A COMPRESSIVE STRENGTH OF 30MPa PRIOR TO POLE INSTALLATION.

3.) SEE STANDARD DETAIL DRAWINGS E 1.13 AND E 1.14 FOR BACKFILL REQUIREMENTS. DIMENSION A = 500.

TITLE STD TRAPEZOIDAL CONC BASE		152
DISTRICT OF PORT HARDY	DATE APR / 98 APPROVED S.C.B.M. SCBE0061	SDE2



GROUND PLATE



NOTES:

1.) THIS GROUNDING METHOD TO BE USED ONLY WHERE SPECIFIED ON CONTRACT DRAWINGS, OR AS DIRECTED BY CONTRACT ADMINISTRATOR.

2.) REFER TO CONTRACT DRAWINGS AND SECTION 16650 FOR DETAILED SPECIFICATIONS.

3.) WHERE PLATE CAN NOT BE INSTALLED UNDER THE BASE IT SHALL BE INSTALLED AT A SIMILAR DEPTH UNDER THE JUNCTION BOX BESIDE THE BASE.

TITLE

GROUND PLATE INSTALLATION

153

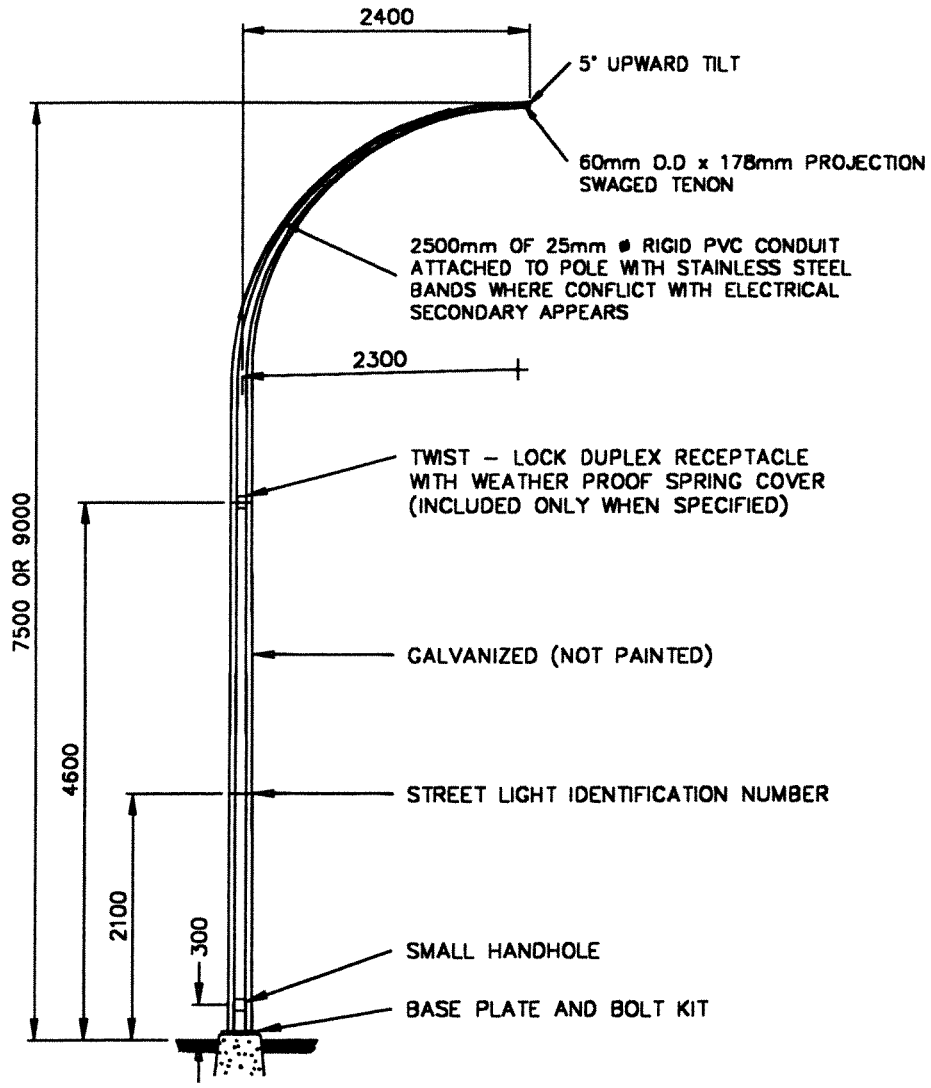
DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.E.No. SCBE0063

SDE3



NOTES:

1.) REFER TO CONTRACT DRAWINGS AND SECTION 16650 FOR DETAILED SPECIFICATIONS.

2.) SEE STANDARD DETAIL DRAWINGS E 5.1 AND E 5.2 FOR BASE PLATE, BOLT KIT AND ASSEMBLY DETAILS

3.) POLE SHAFT TO BE SUPPLIED 0.9m SHORTER WHERE BEING INSTALLED ON SERVICE BASE.

TITLE

SINGLE UNIT DAVIT LUMINAIRE POLE

154

DISTRICT OF PORT HARDY

DATE APR / 98

APPROVED

S.C.E.No. SCBE0062

SDE4