



GUIDELINE(S) FOR GENERAL CONTRACTOR.
CONSTRUCTION SPECIFICATIONS

DIVISION 1 – GENERAL

The Nuxalk Nation adopts the Building codes of Canada newest or recent edition.

Nuxalk Nation is deemed The Authority Having Jurisdiction.

Nuxalk Nation shall comply and conforms to National and BC Building codes of Canada. If necessary engages to enforce.

House Plans

All plans shall be approved by Authority Having Jurisdiction.

All remodeling, renovations and modifications shall be approved by Authority Having Jurisdiction before work is started.

Homes shall be designed to meet client's cultural need(s).

Post and beam, log homes shall comply and conform to National Building Codes and approved by Authority Having Jurisdiction.

Residential home(s) shall be Part 9 of the BC building code; designs shall be constructed to meet and Energuide 80 rating. Nuxalk construction shall supersede the Building code book of Canada

Compliance shall be demonstrated by providing the Energy guide evaluation report.

This clause addresses building envelope, heating, ventilation and air conditioning systems, service water heating, lighting and electrical systems.

Building Science building technology shall be incorporated into home design.

Interior design concepts shall be incorporated into house plans.

PERMITS & FEES 1.1

The General Contractor shall obtain all required permits necessary to fully execute the work as outlined and included in the construction contract documents, and be fully responsible for all fees and all the associated costs.

Insurance 1.2

The Subcontractors and General Contractor shall maintain insurance with a licensed and approved surety company the risks set out hereinafter.

Copies of such and Owner, respectively, before any work under his scope of the contract is started and shall be maintained in full force and effect until the Owner certifies the work completed.

Workers Compensation Regulations 1.2.1

The General Contractor and all Subcontractors shall comply with the provisions of the Workers' Compensation Act of the Province and supply the Owner with a certificate of good standing from the W.C.B. at commencement of the contract, before final payment is made, and at other intervals during the contract as may be required by the Owner. The General contractor and subcontractors shall pay such assessments as will protect themselves and the Owner from claims under the Workers' Compensations Act or applicable legislation.

Employment Insurance Regulations 1.2.2

The General Contractor and all Sub contractors shall comply with the regulations of the Employment Insurance Commission of Canada and Authority Having Jurisdiction

Personal Liability Insurance 1.2.3

Personal liability insurance shall be carried in an amount not less than \$5,000,000 per occurrence and 1 million aggregate. Insurance also shall cover claims for personal injury, including death, which may be made upon the Subcontractor, General Contractor, or the Owner, by members of the general public, by employees of the General Contractor or Owner who may be on or about the site while on or about their usual duties, arising out of any actions on the part of the Subcontractor, his employees or agents, or both.

Property damage insurance shall be carried by the Contractor in an amount of \$250,000 to cover any damage or loss to any property caused by the action or neglect of action by the Contractor, Subcontractor, his employees or agents, or both.

The Contractor shall place fire insurance at his expense with loss payable to the Owner's lender and the Owner, in the amount equal to the contract price.

Site Examination 1.3

The General Contractor and sub contractor's shall visit the site before submitting his tender.

Failure to visit the site will in no way relieve the successful bidder from the necessity of furnishing any materials or performing any work that may be required to complete work in accordance with the contract documents without any additional cost to the Owner.

Start-Up 1.4

Construction shall be initiated on a date to be approved by the Owner.

Work Schedule 1.5

Upon request at the time of notice of award, the Contractor shall prepare a work schedule for submission fourteen (14) days subsequent.

Completion 1.6

The project shall be completed within 120 days of start-up barring unforeseen circumstances.

Building Codes 1.7

The Contractor shall comply with the standards of the current edition of the BC Building Code, current edition, Technical Builders Bulletins; Best building practices guide for Authority Having Jurisdiction.

In this case Nuxalk Nation rules' and regulations is deemed live document. This document shall be amended from time to time.

Errors or omissions in the plans or specifications will not remove the obligation for the Contractor or Subcontractor to construct according to the governing code.

Certification 1.8

All products shall have Warnock Hersey, C.S.A and/or C.C.M.C. acceptance or equal.

Workmanship 1.9

All work shall be done with professional workmanship manner and beyond where required.

Subcontractor Supervision 1.10

The Contractor shall supervise the work of subcontractors and be responsible to the Owner for such work as if it were carried out by the owner. The Contractor shall ensure that all Subcontractors receive a copy of relevant written specifications and drawings.

Dimensions 1.11

The Contractor shall verify all dimensions before starting construction and shall be responsible for the accuracy of same.

Roof Truss Diagrams 1.12

At least one copy of the manufacturer's structural engineered roof truss diagrams for each type shall be available on-site for installation, bracing and inspection purposes.

Design Approvals 1.13

Colour and/or design shall be coordinated with and acceptable to the Owner.

Temporary Power 1.14

Temporary power shall be supplied by the Contractor at the site.

Hook-ups 1.15

The Contractor shall assume full responsibility for the dwelling units until occupied. Any damage prior to takeover shall be repaired at the Contractor's expense.

Contractor's Warranty 1.17

Upon receipt of the final payment on contract, the Contractor shall provide in writing a one year (1yr.) warranty on work, services, and products after final completion report is submitted to Authority Having Jurisdiction. Any defects shall be repaired within one week of receiving notice from the Owner. Subject to change on approval from Authority Having jurisdiction.

"New Home Warranty" 1.18

The contractor shall be registered under the new regulations with the Province of BC Homeowner Protection Office and to also provide the mandatory Warranty Coverage outlined by the regulations. The contractor shall be registered and the houses enrolled in a Warranty Program acceptable to the Homeowner Protection Office and to Nuxalk Nation the owner.

Unit enrollment numbers and/or documentation to be provided to the Nuxalk Nation prior to the first advance.

The Warranty Possession Certificates shall be completed and signed by both the Contractor and the Owner with proof copies forward to Authority Having Jurisdiction, Nuxalk Nation prior to the final advance.

Additions & Deletions Extras/Credits 1.19

No additions or deletions shall be made to the construction as designed and/or specified, without prior written approval from the Owner, in the form of change orders.

Change orders shall clearly describe the work involved, the individual and net costs, if a credit and/or an extra, and be duly signed by the Owner(s). Chief and council of Nuxalk Nation

All extras/additions and/or credits/deletions to the contract shall be mutually agreed between the Owner and the Contractor and shall be priced and paid before work begins or follows.

Note: Subjected to increase defined by materials and job work discription.

Extras/additions shall be at cost plus 10%. Credits/deletions shall be at 100% of installed cost.

Written Specifications Override 1.20

These specifications and any further amendments shall override any specifications or notations on drawings.

Note: Incorporation of new innovative building science or building practice shall over ride general specifications.

Clean up & Disposal 1.21

Upon completion, all units shall be thoroughly cleaned and made ready for occupancy at the Contractor's expense. Remove all surplus materials and construction debris. No liquid or solid material of any kind shall be drained, burned, buried and/or left on site or anywhere else on reserve without written permission from the Owner.

Legal, Survey Pin Markers 1.22

It is the responsibility of the Contractor to ensure that all legal survey pin markers are accurately in place upon project completion.

Pins damaged and/or displaced shall be replaced at contractor's expense by qualified surveyors.

DIVISION 2 -- SITE WORK

Site Preparation 2.1

House site shall be cleared of all surface vegetation within the property lines.

Each site must be visited by Geotechnical engineer and recommended site improvements incorporated into building practices.

Recommended Geo-Technical reports for specific site (s) must be adhered to .Refer to site plans.

All must comply and conform to Authority Having Jurisdiction.

Established trees shall be removed or retained wherever possible and where any doubt exists, retention or removal shall be done in consultation with the Owner.

Structural grade pad for one storey single family Dwellings is required as per specification. (See plans)

2.1

Topsoil shall be stock piled and stored on site and, following rough grading, shall be re-spread on site in locations approved by the Owner.

Top soil if required shall be supplied to meet the requirements established by Authority Having Jurisdiction.

2.1.2

A minimum thirty (30) feet on either side or Fifty (50) feet at the front and back of the house. Gradient shall be sloped away at (3) percent grade.

2.1.3

Site shall be large enough to accommodate septic tank and field and future alternate field if required. Optional connect to Owner /municipal water and sewer system.

Excavation 2.2

Contractor shall be responsible for all foundation and other excavation work according to dimensions on drawings or by agreement with the Owner with allowance for forms and space to apply damp proofing and "Perimeter Foundation Drainage Lines."

Gravity flow from below the basement floor to the septic tank or sewer elevations if required.

Grading and Landscaping 2.3

The Contractor shall be responsible for re-seeding to ensure there is a grass lawn.

2.3.1

The finish gradient shall slope at 3 % away from the unit and swaled to ensure there is no ponding or moisture builds up around the unit.

The finish grading to a reasonably gradient or a prominent level surface free of boulders, stumps, roots of brush etc.

2.3.2

Redistributing topsoil that was stock piled separately during excavation.

2.3.3

Removal of excess excavated material (rock, overburden, tree stumps, etc.) to the local garbage dump, or area designated by the Owner.

2.3.4

Concrete /blacktop driveway to be constructed from the street, into garage to building line.

Meet with a min standard criteria. The driveway sides shall be bordered with curbs and 42 "sidewalks.

The driveway shall be prepared with sub base 3 in minus compacted to 98 percent proctor density.

Black poly shall be installed beneath driveways. Refer to Site Plan.

2.3.5

Concrete sidewalk shall be designed and poured at the front and rear entrances and at the front of the driveway. Refer to the Site Plan. Concrete walk and stairs are specified in Sec. 3.14.

2.3.6

Supply and install min. 18" – 24" diameter galvanized steel culvert pipe under driveway along road ditch where shown site plan. The entrance of drive way leading into yard shall be re-enforced with concrete retaining walls. This designed also to support new culverts. Refer to site plan.

2.3.7

Supply and install pre-grown grass sod to all front, and side yards only if required. Rear yard to be final graded only and left in this state. (As specified Supplementary Specifications).

Sod shall be disease-free, first quality consisting of Penn lawn fescue and highland bent grass at least 1 year old, 3/4" to 1 1/2" thick maximum.

Preparation, laying and maintenance including watering, grass cutting and maintenance until substantial completion or acceptance by the Owner, whichever is later.

Grading 2.4

Final site grading shall be at a gradient of 3-5 % and shall be completed in a manner which will accomplish good overall site drainage and sloped to direct surface water away from the house to a swale, ditch, or other acceptable means of disposal.

DIVISION 3 - CONCRETE AND FOUNDATION

Slab on Grade foundation shall have intergraded radiant flooring system installed: see plans

Footings 3.1

Refer to latest design for concrete foundation design.

Building science, building practice for newly designed footing and foundation.

Other wise: Authority Having Jurisdiction deemed

Footing shall be not less than 8" x 16" and be formed with not less than 2" x 8" material.

Keyed in footings with neoprene or plastic inserts to the walls shall be deemed to deflect and direct moisture from ingress. Other wise designed and poured monolithically.

Reinforcing Steel 3.2

Footings shall have two rows of # 4 - 1/2" diameter reinforcing steel, spaced 3" from the bottom and sides, continuously tied together; walls shall have one (1) # 4 re-bar horizontal for every two (2) vertical feet or part thereof; e.g. a 3 ft wall shall have two horizontal rows of rebar above the footing. Refer to design acceptance from: Authority Having Jurisdiction.

Form Preparation & Removal 3.3

Forms shall be thoroughly cleaned and wetted down with form oil before placing concrete.

Forms shall not be removed for a minimum 3-5 days after placement of concrete, unless approved by a Professional Engineer/ professional, Red seal carpenter or equivalent deemed an approved builder's certificate or deemed equivalence form Authority Having Jurisdiction.

Scaffolding & Equipment 3.4

Scaffolding and/or concrete pumps and equipment where required, shall be supplied at the Contractor's expense.

Dimensions 3.5

Cast in place concrete foundation walls shall be 8" thick minimum, throughout, as shown on drawings.

Frost line 3.6

Footings shall rest on solid bearing a minimum of one to four feet (32-48") below. Properly prepared for proper drainage system with approved native soils and drainage tile.

Final back filled grade with additional allowance for positive surface drainage away from the foundation.

Bearing Capacity 3.7

Contractor shall ensure that footing trench has sufficient bearing capacity as per plan specified

Concrete footings shall be placed on undisturbed soil but where fill is unavoidable it shall be well compacted to acceptable density.

Inspections 3.8

Prior to placing concrete, form work, reinforcing steel and related components specified, shall be inspected by the owner's Code Compliance Inspector, or authorized representative and/ or Authority Having Jurisdiction.

Strength 3.9

All concrete shall be a minimum 20 MPA strength design mix at delivery. Absolute no additional liquids, additives or minerals added unless approved by Authority Having Jurisdiction.

Concrete Handling 3.10

After placing, concrete shall be thoroughly vibrated to minimize honeycombing; voids, stone pockets, honeycomb and repair/fill snap tie holes etc. Prepare footing foundation for proper sealing to prevent moisture ingress or migration.

Anchoring 3.11

1/2" anchor bolts shall be placed at 4 feet O.C. All seismic anchors shall be placed and prepared at this time.

See Sections 6.2 regarding wood separation from concrete.

Foundation Types 3.12

Cast-in-place concrete foundations: Refer to C.S.A Standard CAN 3-A438 and Sec. 9.15 B.C. Building Code and also refer to drawings.

Ensure that ready mix concrete is as specified, supplied by a plant recognized by the B.C. Ready Mix Concrete Association.

2 coats of damp proofing shall be applied to all exterior foundation walls. This application shall be sprayed or rolled independent applications.

The damp proofing shall be completed to the top of the pour strip or within 2 inches from the top of the concrete.

Concrete shall be face flashed to defer moisture ingress to pressure treated wooden sill plates.

New designed foundation shall be completed to engineers design and comply and conform to Authority Having Jurisdiction. Insulated designed footings and foundation shall adhere to drawings.

The new drainage system shall comply with design footing and foundation.

Quad lock / fox block styro foam foundations

Shall have drainage options incorporated into design, the protective exterior wall shall be dimpled and firmly attached to foundation quad lock / fox block.

The option to use quad lock / insulated wall foundation, this space shall be ventilated and conditioned as heated spaces to ensure dryness and consistent air flow

Exterior Walls and Roof lines

Wall Flashing 3.13

All flashing shall be deemed high profile flashing installed in accordance with rain screen principles.

Rain screen wall flashing shall be provided at head of all windows and door openings on exterior walls, in conformance Authority Having Jurisdiction.

All exterior projections or portions that breach to the exterior shall be flashed in accordance with building science concepts such as drainage, durability, deflection and drainage. (4D's)

The flashing shall be aluminum or galvanized iron. The flashing shall project 1"-2.5" past the completed window finishes. Flashing shall blend or match exterior finishes. Flashings shall be sealed with approved coating to prevent deterioration or distortion.

Concrete Walks & Steps 3.14

Concrete walks shall connect front and rear entrances to driveway and/or carport. Concrete steps, where specified, shall be firmly supported on minimum eight inches (8") compacted gravel base on non-organic sub-base, and anchored to the basement wall.

Walks Dimensions 3.15

Walks shall be (42") wide, minimum four inches (4") thick, and placed on a compacted gravel base with a minimum thickness of four inches (4") on a non-organic sub-base.

Finishing 3.16

Walks shall be finished with trowel led edges and broom finished top. Expansion crack control joints of fiber board shall be spaced maximum ten feet (10') O.C. with trowel joints maximum three feet (3') O.C.

Rear Pad 3.17

Rear wooden deck stairs stringers shall rest on four inch (4") thick concrete pad placed on a minimum four inch (4") thick gravel base on a non-organic sub-base. Untreated wood shall be appropriately separated from concrete. Concrete pier footings for decks shall extend to a depth of solid bearing and below frost penetration level.

Curing 3.18

Concrete shall not be disturbed after placing and shall be protected from premature drying and excessively high or low temperatures. Water shall be applied during curing in amounts adequate to assure strength of concrete and to prevent cracking or deformation.

Foundation Drainage 3.19

Four inch (4") min. diameter drain tile/weeping tile or corrugated plastic drainage tubing as manufactured by "Big O" shall be installed around perimeter of footings with minimum 4 inches (4") drain rock cover and discharge to a rock pit, or storm sewer, or other acceptable point of discharge.

Perimeter Insulation 3.20

Perimeter of all slabs on grade and exterior foundation walls shall be insulated down to footing level or two feet below grade with two inches (2") type 2 or 4 rigid foam insulation (min. R-10). Insulation placed on outside of foundation wall must be covered with concrete board, pressure treated plywood or other approved coating; and flashed where necessary to provide tight weather surface. Footing and foundation shall be approved by Authority Having Jurisdiction.

DIVISION 4 - MASONRY

Chimney Footing 4.1

Chimney Footings are included in the contract and shall be minimum 10" thick, 30" x 30" and cast in place under basement floor slab in locations shown. Refer to drawings.

The footing shall be placed on a solid bearing stratum of 100%. The footing pads shall be a minimum of 8 inches thick with 2 rows of rebar placed at 12" centers, the concrete re-bar shall a minimum of ½" and shall be tied at each cross pattern.

Masonry Chimney 4.2

Masonry chimneys and footings for same are included in the contract for each house, as follows:

Masonry chimney 20" x16" outside dimensions clay flue liner 12" x 8" nominal size thimble outlet 7" diameter.

Masonry chimney shall be cap to prevent moisture ingress.

The concrete pad for the masonry chimney shall be placed at the same elevation as the concrete footings.

The clean out shall be placed 18" above finished grade.

Masonry chimney construction shall comply with the requirements of the BC Building Code, current edition. Chimney shall be complete in every respect with pre-cast concrete drip cap at top, fireproof clay liner, 28 gauge G.I. flashing and counter flashing at roof, 7" thimble outlet for wood stove.

All the workmanship shall be completed by a skilled, experienced mason, to a high standard of workmanship.

Where a wood stove is specified, the thimble shall be installed on the chimney one foot (2') above the stove surface and project one inch (2.5") out from masonry.

DIVISION 5 - BASEMENT

Plumbing & Electrical 5.1

All plumbing and electrical walls shall be framed from 2" x 6" studs at 16" O.C. with R-22 Roxall type insulation.

Exterior Walls above Grade Insulation 5.2

Above grade exterior walls shall be framed from 2" x 6" studs @ 16" O.C. with R-22 roxall type batt type insulation. The install shall be uniform, flush and have no voids within structure, partition boxes /voids shall also be insulated in the proper manner.

Exterior Walls Insulation 5.3

Below grade exterior walls if concrete shall be furred out with 2" x 3" pressure treated wood framing at 24" O.C. and enclosed with durable finishes. The framed wall shall have a minimum of R-12 Styrofoam type insulation. If styro foam / fox block / quad lock system is installed, ok to leave as is.

The box joists of the foundation wall/ floor shall be insulated with Roxall or min R 12 styro foam insulation and enclosed with 6 mil poly and incorporated into box joist (4)- 8" x 16" inch vents, the vents shall be screened and operable to slide open and closed during the winter and summer months.

Drywall 5.4

The finishes for the exterior walls of unit/ home shall be dens-guard gold/ M2 tech board for perimeter walls and ceilings.

The kitchen and bathroom(s) shall also be complete with dens-guard gold/ M2 tech board for perimeter walls and ceilings.

The compound to finish exterior walls and interior wals shall be mould resistant and joints shall be taped with fibre tape.

The vapor barrier for all exterior walls shall be 6 mil polyethylene.

The vapor barrier shall be caulked at the base of each sill plate (s). It shall also be caulked on the vertical studs and cripples where there is an opening or a reveal to ensure there is no air or moisture ingress.

The interior walls that are not attached to the exterior shall be ½ inch gypsum board

All drywall shall be completed to industry standards utilizing the best practices guide and the authority having jurisdiction.

Interior Damp proofing 5.5

A 6 mil poly moisture barrier shall be placed on the inside of concrete basement walls up to the grade level height only, to separate furring and styro-foam insulation from concrete.

Stairwell 5.6

Stairs and stairwells leading to unfinished basement areas, including the floor landing at the bottom, shall be finished in every respect, complete with a continuous handrail rails and guard rails / balustrade, etc.

Install complete fire seal and separation between and basement and habitable spaces.

A sealed and fire rated a door is installed between unfinished areas of the basement and the living space.

Basement door shall not swing over stairs. Unless suitable sized landing at entrance / exit and landing shall extend past door swing at least by 12 inches.

DIVISION 6 - (STRUCTURAL) FLOOR CONSTRUCTION

Floor Joists 6.1

Floor joists shall be 2" x 10" # 2 graded Fir or better at 16" O.C. Contractor shall ensure that sized, grades, species, and span meet code. Crowns shall be placed up. No splits of joists, no checking of joists shall be used.

Joists shall have proper seating and shall not extend more that 6 inches past joist /beam seat.

Mechanical Fasteners 6.1.1

Joist hangers, beam hangers and mechanical fasteners shall be used in conjunction with structural framing where required. Proper pressure blocking specified by Architect/engineer/Red seal international certified /experienced carpenter.

Adjustable Pipe Columns 6.1.2

Adjustable steel pipe columns (tele-posts) shall be the type designed/manufactured to support structural loads and be installed according to manufacturer's instructions, anchored to footing and lag-screwed to the support beam.

Wall Plates 6.2

All exterior wall plates on concrete shall be durable plastic or pressure treated wood and shall be designed to ensure there is a consistent form of finishes incorporated to meet the needs of the region.

Interior wall plates on concrete shall be placed on rolled Styrofoam /ethafoam, 2-ply roofing felt or 6 mil poly lapped at corners.

Beams 6.3

Built-up beams where specified shall be #1 Fir grade, species span shall be referenced to meet BCBC 2015 code. Refer to drawings.

Bridging 6.4

Cross-bridging between floor joists shall be 2"x 2" members installed at 7'-0" maximum spacing. A 1" x4" strap board bridging is also required across the underside of joists if spans within 18" of Code maximum. BC Buildings Code Standards applicable to vibration of the floor are to be followed.

Sub-floor 6.5

Note:

Floor surface to be inspected by certified compliance inspector before installation process

Begins.

Flooring shall be 5/8" tongue and groove fir plywood; grain shall be at perpendicular/@ right angels to end of floor joists.

The sub-floor shall be securely glued, screwed and nailed with ring or aradox nails to the joist framing.

Overlay 6.5.1

A 1/4" thick minimum G.I.S. plywood overlay shall be installed over the sub-floor in all areas to receive resilient / linoleum floor finish. NO Orient Strand board (O.S.B.) shall be used.

The floor shall be stapled with divergent staples and have a smooth finish before the residential / commercial grade linoleum is laid down. (The room temperature shall also be 20 degrees Celsius and vinyl properly prepared for final finish.)

Surface Preparation 6.6

Before finished floor application, wood and concrete floors shall be filled and sanded as required. All floors shall be thoroughly cleaned before applying adhesive.

Sheet Flooring 6.7

Armstrong Candid or residential/ commercial grade resilient sheet vinyl flooring shall be installed in the following locations:

- (a) Kitchen
- (b) Front entrance landing or foyer.
- (c) Dining Room
- (d) Basement Stair lower landing
- (e) Main Bathroom
- (f) Ensuite Storage Areas

Stair treads shall have metal nosing and metal edge trim strips to be used elsewhere at junctions throughout. Stair riser shall be finished with impervious finishes to match tread as close as possible. Application shall be permanent.

Eg: Tile or vinyl

Cash Allowance: A cash allowance shall be included in tender of \$5-7.00 per sq. foot for resilient floor materials including installation. Contractor should note that barring exceptional circumstances there will be no provisions for increasing this allowance after the fact...

Pattern Selection 6.8

The Contractor shall submit at least twelve (12) different vinyl patterns and/or colors to the Owner for selection. At least ten square feet (10 sq. ft.) of each pattern shall be left in the respective unit for future patching needs.

Scheduling 6.9

Wherever possible, all laying of resilient flooring shall be done after all other trades have finished.

Carpeting 6.10

Supply and install wall to wall carpet, underlay, track strips, metal edge trim, and all other required materials for a complete flooring finish to the following areas:

(a) Bedrooms only

Carpets shall be "Peerless" or equivalent, of NYLON tufted construction, level loop, or sculptured pile, polyethylene backing.

Carpet and underlayment shall be "Canadian" and the products shall have C.C.M.C. (NRC) Materials Evaluation.

Carpet to be installed by qualified tradesmen to a high standard of workmanship. All carpet joints shall be heat welded.

Underlay shall be "Peerless" or equivalent, "Chip Foam" 3/8" thick 8 lb density// sq. yd. with scrim backing.

Cash Allowance: A cash allowance shall be included in tender. = \$2.75 per square foot for carpet and underlay and installation, complete. Contractor should note that barring exceptional circumstances, there will be no provision for increasing this allowance after the fact.

The contractor shall submit at least twelve (12) different colour samples to the Owner for selection.

Carpet shall be cut from 12 foot widths, cut on site, and placed such that carpet grain is going the same way, with invisible seams.

Surface Preparations 6.11

Before installation of carpet, wood floor surfaces shall be made smooth and clean. Place ¼ inch resilient board, prepare to a smooth finish.

Note: If sub floor experienced water damages. The sub floor shall be repaired to accept new flooring at no cost to Authority Having jurisdiction.

Carports / Cultural 6.12

Carports/ cultural modified rooms are intended and are included in this contract.

Sundecks 6.13

Sundecks are intended and are included in this contract.

The maximum size of the sundecks shall be maximum size of 6' x 10' with suitable roofing coverage and complete with a 2 foot overhang at all sides.

Addenda to deck and roof contract: Must be approved by Authority Having jurisdiction before work begins.

Owner shall be responsible for all additional cost accumulated.

DIVISION 7 - EXTERIOR WALLS

Framing Lumber 7.1 Air tightness test to 1.5 air exchange per hour@ 50 kpa

All framing lumber shall be 6- 9 % kiln-dried / air dried. Spruce Pine fir or better only unless traditional post and beam.

Standard Exterior Walls 7.2

Standard exterior wall framing shall consist of 2" x 6" studs and plates (#2 and better) on 16" center(s).
(no finger joints)

R-22 friction fit roxall batt insulation, 6 mil poly air/vapour barrier and 1/2" dens-guard drywall. Sheathing shall be minimum 1/2" plywood to C.S.A. 0121 latest edition and in accordance with the Plywood Manufacturers Association of BC Grading Rules. Refer to drawings.

Insulation & Vapor Barrier 7.3

Optional: Styro-foam panel(s) fitted to equivalencies on walls only.

Contractor shall ensure that Roxall batt insulation is installed in a manner to provide a uniform insulating value over the entire surface (i.e. batts shall be flush with stud face). Poly air/vapour barrier shall be lapped and caulked and sealed according to Code. All rips and tears shall be taped.

Work shall comply and conform to building science principles.

The exterior wall shall have 6 mil poly boxes for all exterior outlets; they shall be taped and caulked to prevent air and moisture ingress. Caulked at the base of the sill plates to prevent moisture ingress.

Note: Section 16.6 regarding electrical outlets.

Ceiling insulation:	R- 52 minimum batt
Above Grade Wall insulation	R-22 minimum batt
Below Grade Basement furred out walls:	R-12 minimum batt

Exterior Façade: Styro-foams panels to underside trusses.

Building Paper 7.4

Building paper shall be of a breather type and shall be installed with 4" overlapping joints. Tyvek or equivalent is acceptable.

Cedar, hardi- plank, vinyl Siding & Soffits 7.5

All exterior wall cladding shall be rain-screen application.

Exterior soffits shall be perforated soffit /panel shall be staggered to meet the ventilation requirements of 3 sq. ft /1000 sq.ft.

The application of the soffits shall be staggered with solid soffits to ensure the ventilation is acceptable to specific region. Adhere to Authority Having Jurisdiction.

Install the wood / cement board siding and wooden soffits according to manufacturers printed installation instructions and adhere to Authority Having Jurisdiction.

The siding shall be covered by a 40 year manufacturer's warranty against undue weather, cracking, fading and deterioration. The Contractor shall honor a 5 year warranty on the installation.

Clearance 7.6

A minimum of (8-12") clearance shall be provided between exterior wall cladding and the finished grade elevation.

Decking 7.7

Decks over unenclosed space:

Surfaces of decks, balconies, etc. above enclosed space which may or may not be finished shall be an impervious wear-and waterproof material such as fiberglass or sheet vinyl, over min. 5/8" T & G exterior grade fir plywood.

All deck coverings shall be applied to clean, dry surfaces to manufacturer's instructions.

Material shall be extended up adjoining walls under paper and siding and over a metal drip cap at outer edges of plywood. Sheet vinyl materials shall have a Canadian Construction Material Center (CCMC) Evaluation Report Number-such as "Duradek," "Deck-King," or "Weatherdeck" and be min. 60 mil vinyl membrane. All samples for Owner's approval.

Decks shall be sloped to the outside at 2 % or @ 1/4" to 1". Refer to drawings for handrails and balustrades.

Handrails and guard rails 7.7 (a)

Shall be fascia mounted only. Shall be aluminum or Approved fabricated with virgin wood, with min. drying moisture content of 9%. Optional: pressure treated wood with all cuts treated.

Blocking and Furring 7.8

Contractor shall install 2"x 10 " minimum wood blocking between wall framing studs for positive attachment of window covering rod fixtures, upper and lower kitchen cabinets, shower curtain rods, towel bars, toilet paper holders, mirror and medicine cabinets, stair handrails, and where necessary, for drywall at corners, etc.

Provide 2" x 6 " wood framing/furring above kitchen cabinets to lower ceiling to cabinet height in order to conceal ventilation ducts etc. Uniformly finish with drywall and paint as specified elsewhere.

DIVISION 8 - ROOF

Trusses 8.1

Roof trusses shall be high-heel structural type with minimum of 5 /12 pitch and designed for the snow load of the area. Designed with minimum of 5 k.p.a. (100 lbs per sq. ft.) Refer also to Sec. 1.12

Sheathing 8.2

Roof sheathing shall be 1/2" exterior type plywood. Complete with H-clips as center supports at each truss bay.

Mandatory: Support sheathing at the ridge with solid 2x4 inch blocking.

Asphalt Shingles 8.3

Roofing shingles shall be 20- 25 year 3 tab fiberglass shingles with contractors 5 year warranty. Or ...

Supply/install "hurricane "metal roofing or 26 gauge galvanized iron flashing to all valleys, junctions of roofs and walls, and at eaves.

Fascia shall be painted and sealed with suitable paint to prevent deterioration. All joints and cuts shall also seal to prevent deterioration.

Roofing shall be installed in accordance with the manufacturer's printed installation instructions, and those of the R.C.A.B.C. roofing practices manual. Colors shall be chosen by the Owner.

Ceiling 8.4

1/2" dens-guard drywall shall be used on all exterior /outside walls, kitchen and bathroom walls and ceilings associated with high moisture collection.

Note: Application shall be discussed with Authority Having Jurisdiction.

All ceilings enclosed with 6 mil or better poly air/vapour barrier.

The main portion of walls and ceiling other than kitchen and bathroom shall be finish to smooth surface.

Poly shall be properly lapped, taped, caulked and sealed to prevent ingress of moisture and migration of cool air.

Insulation stops. 8.5

Insulation stops shall be installed to provide required ventilation within every 2nd space between trusses. Stops, such as waxed cardboard air chutes shall extend well into the attic space to a point fifteen inches (15") minimum vertically above the ceiling, and shall be securely attached to trusses and top chords.

Stops such as cardboard baffles requiring attachment to the top plate shall be affixed to the outside edge of the plate to allow maximum insulation depth on the top of the wall.

Attic Gable Vents 8.6

Notwithstanding Section 8.5 and 8.8, insect screen gable and vents of at least one square foot (2 sq. ft.) each shall be installed. No continuous roof ventilation shall be install on asphalt roofs.

Fascia & Soffits 8.7

Fascia shall be 2" x 6" material and with 2" x 4" backer primed before installation.

Soffits shall be perforated and non perforated vinyl or aluminum with a finish colour complementing the exterior, as specified elsewhere.

The soffits shall be installed with staggered formation to maximize ventilation to areas where chutes are set. The formation and installation shall be staggered with perforated and solid material.

Attic Ventilation 8.8

Attic ventilation shall be provided by a combination of whirlybird roof mounted ventilator, attic gable end vents and soffits ventilation.

A galvanized, ball bearing whirlybird roof ventilator shall be installed as shown on the exterior elevations of the approved plans.

Eaves Protection 8.9

Eaves protection and flashing shall conform to Sec. 9.27.4 and Section 9.27.5 BC Building Code.

Eaves troughs & Down pipes 8.10

Continuous five inch (5") aluminum eaves troughs and down pipes shall be installed. Colors to be chosen by Authority Having Jurisdiction.

DIVISION 9 - INTERIOR WALLS**Kiln-dried Lumber Materials 9.0**

All wood framing material shall be kiln-dried. No finger joints materials shall be used for structural portions of the framing.

Bearing Walls 9.2

Bearing walls shall be of 2" x 4" # 2 grade studs and plates spaced at sixteen inches (16") O.C. Refer to drawings No Finger joints shall be used.

Partitions 9.3

Partition walls shall be of 2"x4" studs and plates at 16" O.C. The bathroom plumbing wall shall be of 2 x 6".No finger jointed materials.

Molding 9.4

Shoe moldings and other moldings that are required be shall either pre-finished type or paint grade quality "Hemlock" or "Fir" ½" x 2½" minimum. Color and choice selection by Authority Having Jurisdiction.

Shelves 9.5

Shelving shall be of ¾" plywood ensuring all edges are completed and sealed with approved finishes to match the existing. The linen closets shall have a min. of four or more shelves.

DIVISION 10 - CABINETS

CABINET QUALITY 10.1

Kitchen cabinets and bathroom vanities shall be constructed and completed with durable materials of acceptable quality. Preferred plywood; good one side spruce pine fir, maple wood, hardwood density. No OSB products shall be used, No glue impregnated products.

Counters shall be prefabricated, dense marble or molded concrete with a decorative finishes.

The upper cabinets shall be two (2) shelves with 130 degree hinges heavy metal, concealed type; drawers with ball bearing drawer slides.

Doors and frames shall be solid hardwood or smooth finished decorative plywood.

All kitchen units shall be equipped with sliding cutting board.

Caulking 10.2

Countertops shall be installed with a bead of white silicone caulking between splash and wall.

Cabinet Styles & Colors 10.3

The Contractor shall provide at least five (5) alternate styles and/or colors. Final selections shall be made by the Owner. Cabinet manufacturer shall supply shop drawings including layouts for the Owner and Contractor for acceptance prior to fabrication.

Cabinet shall be constructed with solid wood and trimmed.

Mirrors/Cabinets 10.4

Bathrooms shall have a vanity with either:

- a) A lockable drawer and 36" high full-length mirror above it, or
- b) A mirrored recessed medicine cabinet such a Dayton 602 D, or equal, to the Owner's preference.

DIVISION 11- WINDOWS & DOORS

Window Quality 11.1

Approved building science / Rain screen technology window frames only.

Windows shall be vinyl windows or wood framed and manufactured by approved supplier. The window shall be designed to meet regions climatic data. Meet with the requirement of Authority Having jurisdiction.

Vinyl windows or wood framed can be either horizontal or vertical sliders, with opening triple (3) insulated glass sash; c/w neoprene thermal break, locks, insect screens and approved weather stripping. No complicated hinges, window shall have large solid mounted pulls complete windows with secure locking device at suitable locations.

Windows shall be energy star rated only. C.S.A. Specifications CANADA, WEST COAST.

Provide the Owner with samples for acceptance.

Glass 11.1.1

Window glass throughout shall be ½" air space argon sealed double-glazed made from clear, flat, sheet glass as per Sec. 9.7.3 B.C.B.C., bearing I.G.M.A.C. Manufacturer's Identification Number. Bathroom windows shall be of obscure glass.

Protection 11.2

During transit windows and doors shall be crated or otherwise protected from damage. Disfigured merchandise shall be rejected and replaced at the Contractor's expense.

Fixed & Movable Units 11.3

All windows shall have a venting unit with locking devices, except the living room picture window unless show as such.

Refer to drawings.

Screens 11.4

All venting units shall have insect screens.

Liners 11.5

All windows shall have pre-finished liners.

Patio / Sundeck Doors 11.6

Patio/Sundeck doors shall be triple or four hinged type exterior doors, shall be of embossed insulated steel 1.75" – 2 inch thick as manufactured by "Decor Doors (Mfg.) Ltd" for the west coast of B.C only c/w wood frame, weather stripping, sill sweep gaskets, adjustable sill, reinforced astragal with locking mechanism top & bottom, sealed ½" tempered double-glazing.

Conform to B.C. Building Code Security Requirements.

Wood door shall have protective coating impervious to moisture.

Front and Rear Entrance Doors 11.7

Entrance doors shall be of embossed insulated steel 1.75" – 2 inch thick, wood frame, weather stripping, sill sweep gaskets, adjustable sill, and c/w sealed double-glass as shown on drawings.

Glazing in doors and side panels shall be of tempered glass and conform to Code Security requirements.

Storm Doors 11.7.1

The rear entrance door to each house shall have a combination screen/storm door, complete with hinges, lock, self-closing hardware, etc. and be of pre painted "Alcan" baked aluminum. Colour to be choice of Owner.

Door Hardware 11.8

All exterior doors shall be fitted with dead bolts with full 1" throw. Dead bolts and lock sets to be "Weiser, or equivalent and keyed alike with 3 sets of keys. All other hardware to be "Stanley" or McKinney" or equivalent. Finish shall be satin chrome or stain brass to Owner's choice. Supply and install spring-mounted and/or wall mounted chrome/vinyl door stops to all hinged doors.

Interior Doors 11.9

Interior doors shall be of solid decorative wood pre-finished finished wood c/w, triple hinged medium softwood frames pre-finished with a prime coat or other acceptable to the Owner and Authority Having Jurisdiction.

As manufactured by "Sauder", or equal. Doors shall be trimmed with 3-4 inch wood trim, both sides of doors

Final finishes matching décor of home. Selected by Authority having Jurisdiction.

Hallway closets and bedroom closet 11.10

The doors shall solid wood, swing balanced, pre-finished as per bedroom doors.

Door pulls; pull knobs by "Stanley" or equivalent.

Guarantee 11.11

The Contractor shall provide a written guarantee, acceptable to the Owner, that all workmanship and material found defective will be replaced at no cost to the contract within a period of one year from date of total completion of the project. This warranty shall extend to re-caulking around door frames, adjusting doors and similar items as required.

DIVISION 12 - FINISHES AND HARDWARE

Drywall 12.1

Supply and install all required drywall, related labour, materials, and accessories to fully complete the work in all finished room area walls and ceilings, and to unfinished basement exterior walls as intended and indicated on the drawings and/or included in the contract.

Gypsum drywall board shall be cut, fit, installed, fastened, taped, filled, feathered, sanded, primed, spray-textured "white" ceilings and ready to paint by qualified/skilled tradesmen in strict accordance with the drywall manufacturer's installation instructions and shall comply with C.S.A. Standard A82.31M "Gypsum Board Application," C.S.A. A82.27 "Gypsum Board Products", the BC Building Code as follows:

Ceilings, walls – throughout.

Minimum half inch thick dens-guard gypsum board.(upper portion of 8 ft wall ,the upper 2 ft and lower portion 2 ft above rim joist or 2 ft above floor finishes)

Mid wall to be finished with gypsum wall board, match thickness.

Basement Exterior Wall

½" thick dens-guard gypsum board.

Basement Stairwell

½" thick dens-guard gypsum board.

.(upper portion – 2 ft and lower portion 2 ft above rim joist or 2 ft above floor finishes)

The finished Basement Ceiling = ½ - 5/8 " gypsum wall board above wood stove or wood furnace only.

Complete as complete fire separation.

Bathroom - walls

½" dens-guard gypsum board.

Surface Preparation 12.2

All dust, plaster and other debris shall be removed before painting or application of other wall and ceiling finishes.

Wood surfaces: apply shellac to all knot and pitch streaks; sand smooth; tint filler to match wood. Concrete surfaces and stucco and plaster: fill all holes and cracks with non-shrinking spackle compound; remove excess material and strike surfaces flush; do not sand.

Surface Protection 12.3

All areas not to be finished under work in this section shall be covered or removed. All damage or impairment shall be made good.

Colour Approval 12.4

Colours/shades shall be approved by the Owner / Authority Having Jurisdiction before application.

Interior Paint 12.5

Interiors shall have one (1) coat sealer throughout and two (2) coats of finished paint.

No sufficient or substitutes to cover, top coat to be rolled.

Kitchens, washrooms (including ensuite storage areas) and woodwork where applicable shall have oil base paint with three (3) coats, top coat to be rolled.

All other walls shall have either semi-gloss or latex in colors chosen.

Ceilings in kitchens, bathrooms, and ensuite storage areas shall be painted over spray-text

All paint shall meet the requirements of the CGSB 1-GP series concerning quality, durability and specific use. All paints shall be able to withstand heavy use and repeated scrubbing.

All paint shall meet the requirements of the CGSB 1-GP series concerning quality, durability and specific use. All paints shall be able to withstand heavy use and repeated scrubbing.

Exterior Paint 12.6

All exterior wood-such as fascia, gable end trim, door and window frames, trim, columns, beams, handrails and guard-rails, and all otherwise exposed untreated wood-shall be painted and protected from deterioration.

Fill, sand and remove imperfections and properly prepare surfaces. Apply paintable caulking wherever required.

Apply 2 coats of good quality alkyd oil base semi-gloss exterior enamel, lightly sanded between applications. Colour choice to be made by Owner.

Surface Quality 12.7

It shall be the painter's responsibility to have the drywall Subcontractor re-inspect and patch defects, etc. after first coat of paint prior to final coat.

All finished painting shall be free from runs, sags, brush marks, hairs, flooding and similar imperfections.

Surface Touch-up 12.8

At completion, damaged or defective finishes shall be touched up and restored. Additional coats shall be allowed to produce intended appearance.

Sealing and Caulking 12.9

Before the vapour barrier and cladding are installed, all cracks and holes permitting air passage to the outside shall be appropriately caulked to achieve an air tight dwelling. Fiberglass shall be completely yet not tightly packed against door and window frames. Caulking shall be liberally applied where siding contacts door and window frames.

Air/Vapour Barriers 12.10

Air/vapour barriers on exterior walls shall be continuous. See also Section 16.6

Caulked and taped and sealed to prevent moisture and air ingress.

Basement Finishing 12.11

The basement stairwell shall be completely finished with filled and painted drywall, and door(s) as defined and referenced on approved drawings/ plans.

Optional to complete basement @ cost plus by owner.

Hardware 12.12

The contractor shall provide and install all necessary finish hardware. All exterior doors and other doors Over 2'4" in width shall have three hinges.

Lock sets 12.13

Lock sets to exterior doors shall be Weiser A581,

Passage sets shall be Weiser A101,

Privacy sets shall be Weiser A301,

All doors shall have stops 5210 ½ Clo; or equivalent to the above.

Contractor to submit brochures or samples. (Also specified elsewhere - refer to 11.8)

Keys 12.14

For each residence, three master keys shall be provided for the Owner's use as soon as lockup stage is reached.

Butt Hinges 12.15

Butt hinges shall be polished bronze or chrome to match knobs and shall be McKinney 2/00 series or equivalent. Three hinges per door on doors over 2'4" in width.

Bathroom Accessories 12.16

Each bathroom with a toilet shall have a wall switch, ground fault receptacle, 100 cfm .05 sones ceiling fan, vanity with concrete top c/w backsplash and cupboard below, wall mounted light over vanity, chrome paper holder, one (1) 24" towel bar, a chrome shower rod with fittings and hangers, and either 3' mirror over vanity length with locking vanity drawer or medicine cabinet.

Bathroom accessories shall be Hallmark or equal. Bathroom shall be minimum 5' x 8' for three piece.

The bathroom shall be designed with the wooden backing for handrails and grab bars following the 3.8 barrier free design.

Exterior Railing & Balustrades 12.17

Exterior handrails and guard rails shall be metal and fascia mounted.

Handrails 12.18

On all interior stairs, handrails shall be 2½" diameter round wood or as detailed on drawings.

Guarantee 12.19

All hardware shall be guaranteed in writing for a period of at least one (1) year. Defective hardware shall be replaced immediately.

Weather-stripping 12.20

Aluminum weather-stripping or approved equal shall be installed on jambs, heads and thresholds of exterior doors.

Signage Civic Address 12.21

Supply and install 5" metal civic address house numbers in a visible location on front side of house near main entrance.

DIVISION 13 - APPLIANCES**Appliance Connections 13.1**

Refrigerator, electric range, washer, dryer are not included in the construction contract and will be supplied independently by the Owner. Installation and connection of these appliances shall be the Construction Contractor's responsibility including clothes dryer vent and exhaust ductwork, and clothes washer hot and cold water connection hoses. Where a built-in dishwasher is indicated in supplementary specifications, the Construction contractor shall provide the necessary installation including all required plumbing connections, including a water hammer arrester, electrical wiring.

Range Hood & Venting 13.2

Contractor shall supply and install one (1) 30" range hood, Broan, Nutone or equal, complete with a switched light and a two speed min. 200 c.f.m. exhaust fan vented to the exterior through the wall/roof., via an insulated metal (non-aluminum) pipe.

DIVISION 14 - DRAPES**Drape Rod Blocking 14.1**

During construction, wood blocking shall be installed between studs to provide solid support for drapery rods on all windows in finished areas. Blocking shall extend across the full width of the wall containing the large living room window, and 16 inches past all other windows.

Window Coverings 14.2

Window coverings - rods, curtains, and/or blinds, etc. - will be supplied and installed by the Band and/or the Band's supplier.

DIVISION 15 - PLUMBING, HEATING & VENTING

Code Requirements 15.1

All materials and fixtures throughout shall be installed with hot and cold water shut-off valves in appropriate locations, concealed where possible, including the hot water tank.

Plumbing Fixtures 15.2

Fixture colour shall be chosen by the Owner from manufacturers' standard range.

- W.C. to be American Standard - Cadet 2; seat to be olsonite.
- The water closet shall be lined or insulated.
- Lavatory to be American Standard - Ovation; Waltec faucets and trim.
- Bathtub as manufactured by "Hytec" to be one piece completed with non-slip bottom; Waltec faucets and trim.

Bathtub 15.3

Bathtub and enclosure shall be sixty inches (60") long, Hytec or equivalent one-piece fiberglass.

The top of the tub shall be finished to the ceiling levels with a decorative tile.

The tiles shall also extend down along side of the rims of the tub from the ceiling to the floor.

The tiles shall be grouted and sealed to industry standards. Colours/patterns shall be chosen by the Authority Having Jurisdiction.

Sink 15.4

Kitchen sink shall be double stainless steel, min. 6" deep, with faucets fastened onto sink flange; not fastened separately onto the counter.

Laundry Tubs 15.5

Single laundry tub of durafoam or coated fiberglass shall be installed near washing machine and permanently fastened to the wall or floor.

Lead Free Materials 15.5.1

Any pipe, solder or flux used in the water system shall be lead free.

Rough-in Plumbing 15.6

Rough-in plumbing for future 3 piece bathroom shall be installed in the basement; location to be below the upper floor bathroom which shall be confirmed by CMHC, in conjunction with the Owner.

Unless deemed complete bathroom shall be 3 piece, completed to industry standards.

The bathroom shall also have incorporated consistent sources of heat and suitable ventilation system.

Walls and ceiling finishes shall be Dens –guard gold finishes.

The door shall match existing doors.

Water Lines 15.7

Water piping shall be polybutelene throughout. Optional: High grade copper pipes.

Water lines shall be protected from freezing danger. Where kitchens are located over unheated areas (e.g. carports), water lines shall not be run though cabinets, etc.

Connections shall be thoroughly tested to ensure there are no leaks before being covered by drywall.

Water Service 15.8

Unless otherwise indicated, the Contractor shall be responsible for:

- (a) Providing and installing curb stop/shutoff and water service line (1½") to a point three feet (3') outside the foundation wall, and
- (b) Connecting said water service line to the water main.

Water service line shall enter the unit through the floor beneath stairs or if this is not possible, in an approved location, with a shut off valve close to point of water line entry so that lines can be completely drained.

Pressure Reducing Valves 15.9

All units shall have pressure reducing valves.

Forced Warm Air Heating System 15.10

Heating system shall be an automatic thermostatically controlled furnace and forced warm air heating distribution system. The Heating system and ventilation requirements shall be sized by a specialist to suit the design and size of the building.

All sheet metal duct work shall be sized for even air flow with sufficient number of runs throughout. Return air ducts shall run from bedrooms for proper circulation. All joints shall be well fitted, screwed and fire-taped.

Flu pipe connecting wood stove to masonry chimney shall be 26 gauge stainless steel and securely fastened together at each joint with minimum of 3 screws per joint.

Warm and cold air registers - "Leigh Air Control" model #29 side well with beige enamel finish, or equal.

System must comply with the most current mechanical ventilation requirements of the B.C. & National Building codes, Sec. 9.33.

Where furnace/wood stove locations result in clearances to combustible framing that are less than acceptance label minimum requirements, heat shields and/or floor pads shall be supplied, installed and achieve Fire Safety Clearances are maintained. Manufacturer's installation and inspection purposes.

A combustion fresh air duct shall be provided from the outside, complete with screened hood. Duct shall be directly connected to the furnace and or stove air intake where possible, or into a termination device next to it close to the floor. All combustion air ducts shall be insulated to R-8 at least 6'-0" from the intake source.

HEATING Option A:

Radiant floors plus electric heater complete with fan as back up .(per room)

Option B

Electric Forced Warm Air Furnace – Heat Pump

Electric Furnace - Federal Pioneer (or equal) residential electric furnace model CEF 15, 15kw. Heating capacity; 800/840 cfm at 0.20 inches of water column; ¼ hp blower motor; complete with thermostats. Install in accordance with the manufacturer's installation instructions and complete with an all sheet metal ducted supply and return air distribution system, 20" x 20" x 1" Clean Air Filter, Combustion air Supply, all meeting H.R.A.I. Standards, complete in every respect. Connection to a masonry chimney with 6" flu pipe. The Masonry Chimney with Clay Flue Liner is specified elsewhere in Sec. 4.1 and 4.2.

HEATING Option C: Combination Wood/Electric Furnace

With a Masonry Chimney and a Clay Flue Liner

Combination Wood and Electric Furnace - Valley Comfort combination (or equal) residential wood/electric system model HWE68 15 kW. Electric heating capacity; 80,000 BTU wood burning heating capacity; ¼ hp blower motor; complete with thermostats. Install in accordance with manufacturer's installation instructions and complete with an all sheet metal 1" Clean Air Filter, Combustion Air Supply, all meeting H.R.A.I. Standards, complete in every respect. Connection to a masonry chimney with 6" flu pipe.

Hot water Tank 15.11

Hot water tank shall be an electric 220 volt "Rheem Ruud" forty (60) imperial gallon capacity and with a 5 year warranty. The contractor shall be fully responsible for ensuring those hot water tanks (s) are filled with water before energizing. The hot water tank must be installed with a pressure relief valve, with an extension pipe that drains into a drain tray that drains into a floor drain. Refer to the most current BC Building, Plumbing and Electrical codes.

Optional

2- 60 gallon tanks one to heat radiant floor one for domestic hot water supply or)ne domestic hotwater tank and one on demand hot water heater.

Ventilation 15.12

Bathrooms, shall have exhaust fans vented to the exterior, through the roof. System shall comply with mechanical ventilation requirements of the BC Building Code.

Bathroom fans shall:

- (1) Be designed for permanent operation;
- (2) have a capacity of 100 c.f.m. or more;
- (3) have a noise rating not exceeding .05 sones;
- (4) Interconnected with dehumidistat mounted on the bathroom wall.

All ducts shall be galvanized sheet metal and insulated in unheated areas (e.g. attics, crawl spaces).

All duct joints shall be tightly screwed and taped.

Clothes Dryer Venting:

Install new 4" diameter Traditional White Style aluminum duct, wall ventilation duct shaft enclosure and grille, complete with insect screen, back-draft damper, closeable louver grille cover.

Security install, complete with silicone caulking at exterior wall junction.

Supply and install 4" diameter aluminum ducting connecting the clothes dryer to the vent kit, securely fastened using metal clamps.

Hose Bibs 15.13

Two (2) frost-free self draining exterior hose bibs shall be installed per house; one at the front and one at the rear.

Septic Tank and Drainage Hold 15.14

Contractor shall supply and install a sewage septic tank, disposal field and connections to each house, complete in every respect.

Tanks shall be of pre-cast concrete 800 gallon/3600 liter minimum, with a disposal field of a size and design to be determined by Health Canada.

Tests, permits, designs, excavations, installation and back-fill shall be as per the requirements of the Health Canada.

Contractor shall complete and submit "as built" scaled drawings showing size, locations and dimensions of tanks and fields and relationship with dwelling units.

Wall mounts and space Heating 15.15

Space heating in the units during the life of the contract shall be the Contractor's sole responsibility.

DIVISION 16 - ELECTRICAL

Temporary Power 16.1

Contractor shall provide a temporary power source for construction as required.

Wiring Hook-up 16.2

Contractor shall supply and install all electrical wiring and fixtures as shown on plans and hook up to BC Hydro services and pay all relevant hookup fees and charges.

Electrical Service Panel 16.3

Electrical service shall be 100 Amp; 200 Amp service required if electric furnace is installed. Service panel shall be the type which includes a hinged and lockable protection cover.

Interior and exterior lighting

Shall be LED lighting

TELUS - Telephone Pre-Wire 16.4

Contractor shall arrange for TELUS pre-wiring at the appropriate time. Three phone jacks shall be installed per unit at the Contractor's expense, at locations approved by the Owner. When this Telephone Wiring work is performed by an independent Electrical Contractor, the contractor is to follow the TELUS Telephone Wiring Guide for B.C. Residential Homes.

Cable TV 16.5

The Contractor shall supply and install max. 3 cable TV outlets per house as per Owner's choice.

Fixture Allowance 16.7

Cash allowance for lighting fixtures shall be \$1200.00 (wholesale cost) per unit. Samples or drawings shall be submitted for approval and chosen by the Owner. Note; All light bulbs shall be included in the contract price, not in the cash allowance.

Copper Wire 16.8

All electrical wiring shall be 12- 25 gauge copper. Home runs shall not have more that (6) fixture(s) on line.

Smoke Detector 16.9

Contractor shall supply and install two (2) 110v hardwired smoke alarms for each unit, one per floor, to be wall mounted 12" below ceiling in corridor, between sleeping area and the remainder of the dwelling unit as per the BC Building Code and BC Electrical Code requirements. Alarms shall be hard-wired together so that both are activated simultaneously.

Exterior Outlets 16.10

Minimum of two (2) weatherproof exterior electrical outlets shall be installed at locations with ground fault breakers as per BC Electrical Safety Act and pursuant regulations.

Permits 16.11

Permits and inspections shall be secured from the BC Electrical Inspections Branch. Final permits shall be presented to Authority Having jurisdiction before final payment is released.

Bathroom Wiring 16.12

Ground fault outlets shall be provided in all bathrooms.

Basement Wiring 16.13

All basement lighting shall be controlled by switches at appropriate locations.

Interior duplex outlets located on exterior walls shall be placed approximately 24" above the concrete floor on the wood framed walls and every 12'-0" along the walls.

Interior stair lighting shall be controlled by three-way switches, located at top and bottom of stairs except that split entry units shall have four-way switched stair lighting.

Wiring in basements shall not be run at a horizontal height in unfinished frame walls that can be reached by children to avoid concerns related to safety.

Mast & Meter 16.14

The electrical mast and meter shall be located both so as to not detract from the appearance of the unit and to minimize the amount of tree cutting along the service line. Mast shall be installed in accordance with BC Electrical Branch code requirements.

Contractor responsibility to ensure proper backing is placed for mast mount.

Note:

Mast shall project through roof line at exterior, not breach building envelope and shall be installed in accordance with Authority Having jurisdiction.

Electric Power Responsibility 16.15

Contractor shall be responsible for all electrical utility costs incurred during the life of the contract.