



Public Works and Government Services Canada

Requisition No. EZ899-200421/A

MERX I.D. No. _____

SPECIFICATIONS
For
Roof Remediation
Port of Beaver Creek

Project No. R.102580.001

May 2019

APPROVED BY:


Regional Manager, A&E Services

2019-05-27
Date


Construction Safety Coordinator

2019-05-22
Date

TENDER:


Project Manager

2019-05-23
Date



Public Works and Government Services Canada

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Departmental Representative – SEAL & SIGNATURE

Discipline

Seal / Signature / Date

Building Enclosure Department Representative:
RDH Building Science Inc.

END OF SECTION

1 GENERAL

1.1 CODES

- .1 Perform work to CURRENT Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date.

1.2 DESCRIPTION OF WORK

- .1 Work under this Contract covers replacement of asphalt shingle roofing and related gutters and rainwater leaders at seven (7) staff houses and four (4) garages located at Beaver Creek, Yukon.
- .2 Work to be performed under this Contract includes, but is not limited to, the following items covered further in the Contract documents.
 - .1 Replacement of existing asphalt shingle roofing and related accessories as indicated.
 - .2 Provision of plywood over-sheathing to existing shiplap sheathed roofs as indicated.
 - .3 Replacement of existing gutters and rainwater leaders as indicated.
 - .4 Provision of gutters and rainwater leaders, where currently missing, as indicated.
 - .5 Replacement of existing eave and rake fascia boards as indicated.
 - .6 Provision of metal cladding to eave and rake fascia boards as indicated.

“Green Requirements:

- .7 Use only environmentally responsible green materials/products with no VOC emissions or minimum VOC emissions of indoor off-gassing contaminants for improved indoor air quality – subject of Departmental Representative’s approval of submitted MSDS Product Data.
- .8 Use materials/products containing highest percentage of recycled and recovered materials practicable – consistent with maintaining cost effective satisfactory levels of competition.
- .9 Adhere to waste reduction requirement for reuse or recycling of waste materials, thus diverting materials from landfill.

1.3 CONTRACT DOCUMENTS

- .1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work.
- .2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.

1.4 DIVISION OF SPECIFICATIONS

- .1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.
- .2 A division may consist of the work of more than 1 subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.
- .3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.5 TIME OF COMPLETION

- .1 Complete the project as a single project during the summer of 2019, ready for use within 12 weeks after Contract Award.

1.6 HOURS OF WORK

- .1 Restrictive as follows:
 - .1 Schedule deconstruction, removal and construction work after normal working hours of the building and during the day on weekends and/or holidays. Normal weekday working hours to be determined in consultation with the residents.
 - .2 Notify Departmental Representative of all after hours work, including weekends and holidays.

1.7 WORK SCHEDULE

- .1 Carry on work as per indicated “PHASES” and as follows:

- .1 Within 10 working days after Contract award, provide a "phasing bar chart" and a schedule showing anticipated progress stages and final completion of the work within the time period required by the Contract documents. Indicate the following:
 - .1 Submission of shop drawings, product data, MSDS sheets and samples.
 - .2 Commencement and completion of work of each section of the specifications or trade for each phase as outlined.
 - .3 Final completion date within the time period required by the Contract documents.
- .2 Do not change approved Schedule – without notifying Departmental Representative.
- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

1.8 COST BREAKDOWN

- .1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

1.9 CODES, BYLAWS, STANDARDS

- .1 Perform work in accordance with the National Building Code of Canada (NBC) 2015, and other indicated Codes, Construction Standards and/or any other Code or Bylaw of local application.
- .2 Comply with applicable local bylaws, rules and regulations enforced at the location concerned.
- .3 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.
- .4 In any case of conflict or discrepancy, the most stringent requirements shall apply.

1.10 DOCUMENTS REQUIRED

- .1 Maintain 1 copy each of the following at the job site:
 - .1 Contract drawings.
 - .2 Contract specifications.
 - .3 Addenda to Contract documents.
 - .4 Copy of approved work schedule.
 - .5 Reviewed/approved shop drawings.
 - .6 Change orders.
 - .7 Other modifications to Contract.
 - .8 Field test reports.

- .9 Reviewed/approved samples.
- .10 Manufacturers' installation and application instructions.
- .11 One set of record drawings and specifications for "as-built" purposes.
- .12 National Building Code of Canada 2015.
- .13 Current construction standards of workmanship listed in technical Sections.
- .14 Building Safety Plan.

1.11 REGULATORY REQUIREMENTS

- .1 Obtain and pay for – Building Permit, Certificates, Licenses and other permit required by regulatory municipal, provincial or federal authorities to complete the work.
- .2 Provide inspection authorities with plans and information required for issue of acceptance certificates.
- .3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.12 CONTRACTOR'S USE OF SITE

- .1 Use of site:
 - .1 Exclusive and complete for execution of work.
 - .2 Assume responsibility for assigned premises for performance of this work.
 - .3 Be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative such as moving contractors and furniture installers.
- .2 Perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing.
- .3 Do not unreasonably encumber site with material or equipment.

1.13 EXAMINATION

- .1 Examine site and be familiar and conversant with existing conditions likely to affect work
- .2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.14 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by the authorities having jurisdiction.

1.15 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space, and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain his approval for actual locations.
- .4 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative.

1.16 CUTTING AND PATCHING

- .1 Cut existing surfaces as required to accommodate new work.
- .2 Remove items so shown or specified.
- .3 Do not cut, bore, or sleeve load-bearing members.
- .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .5 Fit work airtight to pipes, sleeves ducts and conduits.
- .6 Conceal pipes, ducts and wiring in raised floors, wall and ceiling construction of finished areas except where indicated otherwise.
- .7 Patch and make good surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, colour, finish and texture.
- .8 Install firestops and smoke seals in accordance with ULC-S115, around pipe, ductwork, cables and other objects penetrating fire separations to provide fire resistance not less than the fire resistance of surrounding floor, ceiling and wall assembly.
- .9 Making good is defined as matching construction and finishing materials and the adjacent surfaces such that there is no visible difference between existing and new surfaces when viewed from 1.5 metres in ambient light, and includes painting the whole surface to the next change in plane.

1.17 SETTING OUT OF WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.

- .3 Supply such devices as templates required to facilitate Departmental Representative's inspection of work.

1.18 ACCEPTANCE OF SUBSTRATES

- .1 Each trade shall examine surfaces prepared by others and job conditions which may affect his work, and shall report defects to the Departmental Representative. Commencement of work shall imply acceptance of prepared work or substrate surfaces.

1.19 QUALITY OF WORK

- .1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman.
- .2 The workmanship, erection methods and procedures to meet minimum standards set out in the National Building Code of Canada 2015 and applicable Construction Standards.
- .3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.20 WORKS COORDINATION

- .1 Coordinate work of subtrades
 - .1 Designate one person to be responsible for review of contract documents and shop drawings and managing coordination of Work.
- .2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
 - .1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.
 - .1 Pay particular close attention to overhead work above ceilings and within or near to building structural elements.
 - .2 Identify on coordination drawings, building elements, service lines, rough-in points and indicate location services entrance to site.
 - .3 Facilitate meeting and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
 - .4 Publish minutes of each meeting.
 - .5 Plan and coordinate work in such a way to minimize quantity of service line offsets.
 - .6 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.

- .3 Submit shop drawings and order of prefabricated equipment or rebuilt components only after coordination meeting for such items has taken place.
- .4 Work coordination:
 - .1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed work.
 - .3 Ensure disputes between subcontractors are resolved.
- .5 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate Work.

1.21 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- .1 In accordance with Section 01 33 00, submit the requested shop drawings, product data, MSDS sheets and samples indicated in each of the technical Sections.
- .2 **Allow sufficient time for the following:**
 - .1 Review of product data and samples.
 - .2 Approval of shop drawings.
 - .3 Review of re-submission.

1.22 RELICS AND ANTIQUITIES

- .1 Relics and antiquities and items of historical or scientific interest shall remain property of Department. Protect such articles and request directives from Departmental Representative.
- .2 Give immediate notice to Departmental Representative if evidence of archeological finds are encountered during excavation/construction, and await Departmental Representative's written instructions before proceeding with work in this area.

1.23 SECURITY CLEARANCES

- .1 Personnel will be checked at start of work shift and provided with pass which must be worn at all times.
- .2 Contractor shall be fully responsible for securing the premises and its contents throughout the construction period.

- .3 Departmental Representative will provide escort for requiring access from inside the building. No escort will be required for work being completed on the exterior of the building.

1.24 PROJECT MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.25 AS-BUILT DOCUMENTS

- .1 The Departmental Representative will provide 2 sets of drawings, 2 sets of specifications, and 2 copies of the original AutoCAD files for "as-built" purposes.
- .2 As work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings and shop drawings as changes occur.
- .3 Refer to Section _____.

1.26 CLEANING

- .1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.
- .2 **Ensure cleanup of the work areas each day after completion of work.**
- .3 Clean interior building areas when ready to receive finish painting and continue cleaning on an as-needed basis until building is sufficiently completed or ready for occupancy.
- .4 In preparation for interim and final inspections:
 - .1 Examine all sight-exposed interior and exterior surfaced and concealed spaces.
 - .2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces, including glass and other polished surfaces.
- .5 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

1.27 DUST CONTROL

- .1 Provide temporary dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.

1.28 ENVIRONMENTAL PROTECTION

- .1 Prevent extraneous materials from contaminating air beyond construction area, by providing temporary enclosures during work.

- .2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.
- .3 Ensure proper disposal procedures in accordance with all applicable territorial regulations.

1.29 ADDITIONAL DRAWINGS

- .1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.
- .2 Upon request, Departmental Representative may furnish up to a maximum of 10 sets of Contract documents for use by the Contractor at no additional cost. Should more than 10 sets of documents be required the Departmental Representative will provide them at additional cost.

1.30 BUILDING SMOKING ENVIRONMENT

- .1 Smoking within the building is not permitted.

1.31 SYSTEM OF MEASUREMENT

- .1 The metric system of measurement (SI) will be employed on this Contract.

1.32 FAMILIARIZATION WITH SITE

- .1 Before submitting tender, visit site – as indicated in tender documents and become familiar with all **conditions likely to affect the cost of the work.**

1.33 SUBMISSION OF TENDER

- .1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and inspected the site, and is fully conversant with all conditions.

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 APPROVALS

- .1 Approval of shop drawings and samples: refer to Section 01 11 55, Clause 1.21.

1.2 GENERAL

- .1 This Section specifies general requirements and procedures for the Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.
- .2 Present shop drawings, product data and samples in SI Metric units.
- .3 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submissions.
- .5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract documents and stating reasons for deviations.
- .6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.
- .7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.
- .8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.
- .9 **Do not proceed with work until relevant submissions are reviewed and approved by the Departmental Representative.**

1.3 SUBMISSION REQUIREMENTS

- .1 Coordinate each submission with the requirements of the work and the Contract documents. Individual submissions will not be reviewed until all related information is available.
- .2 Allow (5) five days for Departmental Representative's review of each submission, unless noted otherwise.
- .3 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.
- .4 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.
 - .5 Details of appropriate portions of work as applicable.
 - .1 Fabrication.
 - .2 Layout, showing dimensions (including identified field dimensions: and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .6 After Departmental Representative's review, distribute copies.

1.4 SHOP DRAWINGS

- .1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portion of work which are specific to project requirements.

- .2 Maximum sheet size: 850 x 1050 mm.
- .3 Submit 6 prints of shop drawings for each requirement requested in the specification sections and/or as requested by the Departmental Representative.
- .4 Cross-reference shop drawing information to applicable portions of the Contract documents.

1.5 SHOP DRAWINGS REVIEW

- .1 Review of shop drawings by Public Works and Government Services Canada is for the sole purpose of ascertaining conformance with the general concept.
- .2 This review shall not mean that Public Works and Government Services Canada approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same.
- .3 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.
- .4 Without restricting the generality of the foregoing, the Contractor is responsible for:
 - .1 Dimensions to be confirmed and correlated at the job site.
 - .2 Information that pertains solely to fabrication processes or to techniques of construction and installation.
 - .3 Coordination of the work of all sub-trades.

1.6 PRODUCT DATA

- .1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.
- .2 Delete information not applicable to project.
- .3 Supplement standard information to provide details applicable to project.
- .4 Cross-reference product data information to applicable portions of Contract documents.
- .5 Submit 6 copies of product data.

1.7 SAMPLES

- .1 Samples: examples of materials, equipment, quality, finishes and workmanship.
- .2 Where colour, pattern or texture is a criterion, submit a full range of samples.

- .3 **Reviewed and accepted samples will become the standard of workmanship and material against which installed work will be verified.**

1.8 PROGRESS
SCHEDULE

- .1 Submit work schedule and cost breakdown as required in Section 01 11 55.

1.9 TEST RESULTS AND
INSPECTION
REPORTS

- .1 Submit in duplicate test results and inspection reports required by Section 07 31 13

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PWGSCC Update on Asbestos Use

Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at <http://www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html>

1 GENERAL

1.1 REFERENCES

- .1 Government of Canada.
 - .1 Canada Labour Code - Part II
 - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC):
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.
- .3 The Canadian Electric Code (as amended)
- .4 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z797-2009 Code of Practice for Access Scaffold
 - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
 - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
 - .4 CSA Z1006-10 Management of Work in Confined Spaces.
 - .5 CSA Z462- Workplace Electrical Safety Standard
- .5 National Fire Code of Canada 2010 (as amended)
 - .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.
- .6 American National Standards Institute (ANSI):
 - .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
- .7 Province of British Columbia:
 - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
 - .2 Occupational Health and Safety Regulations
- .8 Any Hazardous Materials Assessment Reports must be listed in this section.

SPEC NOTE:

Delete sections not included in the Contract specifications and note that this is not an exhaustive list.

1.2 RELATED SECTIONS

- .1 Refer to the following current NMS sections as required:
 - .1 Submittals procedures: Section [01 33 00]
 - .2 Temporary facilities: Section [01 51 00]

1.3 WORKERS' COMPENSATION BOARD COVERAGE

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

- .1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.5 SUBMITTALS

- .1 Submit to Departmental Representative submittals listed for review. [in accordance with Section 01 33 00]
- .2 Work effected by submittal shall not proceed until review is complete.
- .3 Submit the following:
 - .1 Site Specific Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of current Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency Procedures.
- .4 The Departmental Representative will review the Contractor's Site Specific Health and Safety Plan and emergency procedures, and provide comments to the Contractor within [5] days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

- .5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.
- .6 Submission of the Site Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:
 - .1 Be construed to imply approval by the Departmental Representative.
 - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
 - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor for work under this contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with Site Specific Health and Safety Plan.

1.7 HEALTH AND SAFETY COORDINATOR

- .1 The Health and Safety Coordinator:
 - .1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.
 - .2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.
 - .3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

- .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
- .2 Secure site at night time [or provide security guard] as deemed necessary to protect site against entry.

1.9 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Multi-employer work site.
 - .2 Federal employees and general public.

1.10 UTILITY CLEARANCES

- .1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work
- .2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

1.11 REGULATORY REQUIREMENTS

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.12 WORK PERMITS

- .1 Obtain speciality permit[s] related to project before start of work.

1.13 FILING OF NOTICE

- .1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.
- .2 Provide copies of all notices to the Departmental Representative.

1.14 HEALTH AND SAFETY PLAN

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
 - .1 Primary requirements:

- .1 Contractor's safety policy.
- .2 Identification of applicable compliance obligations.
- .3 Definition of responsibilities for project safety/organization chart for project.
- .4 General safety rules for project.
- .5 Job-specific safe work procedures.
- .6 Inspection policy and procedures.
- .7 Incident reporting and investigation policy and procedures.
- .8 Occupational Health and Safety Committee/Representative procedures.
- .9 Occupational Health and Safety meetings.
- .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
- .3 List hazardous materials to be brought on site as required by work.
- .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new workers.
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
- .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
- .5 Departmental Representative's review: the review of Site Specific Health and Safety Plan by Public Service and Procurement Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.15 EMERGENCY PROCEDURES

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
 - .1 Designated personnel from own company.
 - .2 Regulatory agencies applicable to work and as per legislated regulations.

- .3 Local emergency resources.
- .4 Departmental Representative [site staff].
- .2 Include the following provisions in the emergency procedures:
 - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
 - .2 Evacuate all workers safely.
 - .3 Check and confirm the safe evacuation of all workers.
 - .4 Notify the fire department or other emergency responders.
 - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
 - .6 Notify Departmental Representative [site staff].
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
 - .1 Work at high angles.
 - .2 Work in confined spaces or where there is a risk of entrapment.
 - .3 Work with hazardous substances.
 - .4 Underground work.
 - .5 Work on, over, under and adjacent to water.
 - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.

1.16 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
 - .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per [Section 01 33 00].
 - .2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
 - .3 Provide adequate means of ventilation in accordance with [Section 01 51 00].
 - .4 The contractor shall ensure that the product is applied as per manufacturers recommendations.
 - .5 The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

1.17 ASBESTOS HAZARD

- .1 Carry out any activities involving asbestos in accordance with applicable Provincial / Federal Regulations.
- .2 Removal and handling of asbestos will be in accordance with applicable Provincial / Federal Regulations.

1.18 PCB REMOVALS

- .1 Mercury-containing fluorescent tubes and ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.
- .2 Remove, handle, transport and dispose of as indicated in Section [02 84 00].

1.19 REMOVAL OF LEAD-CONTAINING PAINTS

- .1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.
- .2 Carry out demolition and/or remediation activities involving lead-containing paints in accordance with Worksafe BC Regulations.
- .3 Dry Scraping/Sanding of any materials containing lead is strictly prohibited.
- .4 The use of Methylene Chloride based paint removal products is strictly prohibited.

1.20 SILICA

- .1 Carry out work in accordance with Worksafe BC regulations

1.21 ELECTRICAL SAFETY REQUIREMENTS

- .1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
 - .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
 - .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.22 ELECTRICAL LOCKOUT

- .1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of

workers for every event where work must be done on any electrical circuit or facility.

SPEC NOTE:

Procedures specified for lockout need to be consistent with site procedures for existing facilities or equipment.

- .2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.
- .3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.23 OVERLOADING

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.24 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1-1975 (R2003).

1.25 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.26 CONFINED SPACES

- .1 Carry out work in confined spaces in compliance with Provincial / Territorial Regulations.

**1.27 POWDER-ACTUATED
DEVICES**

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

**1.28 FIRE SAFETY AND
HOT WORK**

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.29 FIRE SAFETY REQUIREMENTS

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the DR is required prior to any gas or diesel tank being brought onto the work site.

1.30 FIRE PROTECTION AND ALARM SYSTEM

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut off.
 - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.
- .3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.31 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.32 POSTED DOCUMENTS

- .1 Post legible versions of the following documents on site:
 - .1 Site Specific Health and Safety Plan.
 - .2 Sequence of work.
 - .3 Emergency procedures.
 - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
 - .5 Notice of Project.
 - .6 Floor plans or site plans.
 - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
 - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
 - .9 Material Safety Data Sheets (MSDS).

- .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.33 MEETINGS

- .1 **Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.**

1.34 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 ACCESS AND DELIVERY

- .1 Only the designated entrance may be used for access to building.
 - .1 Maintain for duration of Contract.
 - .2 Make good damage resulting from Contractor's use.

1.2 STORAGE FACILITIES

- .1 Storage space will be limited to the area of construction.
- .2 Storage locations to be reviewed and approved by the Departmental Representative.

1.3 POWER

- .1 Contractor to arrange and pay for the provision of temporary electrical power and lighting as necessary. Do not draw electrical power from the existing houses or garages.

1.4 WATER SUPPLY

- .1 Water supply is available at existing building and may be used for construction purposes at no cost.

1.5 SANITARY FACILITIES

- .1 Contractor to arrange and pay for the provision of temporary sanitary facilities as necessary.

1.6 HEATING AND VENTILATION

- .1 Do not begin work until arrangements have been made with the Departmental Representative for protection of on-floor heating, ventilating and air conditioning.
 - .1 If there is any dirt in the heating and ventilation system, it will be the Contractor's responsibility to return it to its original state in accordance with the Departmental Representative's specifications.
- .2 Prevent dust and odour migration to other occupied areas.
 - .1 Do not activate HVAC system to occupied floors. Purge air from construction floors only when directed by Departmental Representative, where dust and fumes will be generated.
 - .2 Change filters in existing HVAC system frequently.

1.7 SCAFFOLDING

- .1 Construct and maintain scaffolding in rigid, secure and safe manner.

**1.8 REMOVAL OF
TEMPORARY
FACILITIES**

- .2 Erect scaffolding independent of walls. Remove promptly when no longer required.

- .1 Remove temporary facilities from site when directed by the Departmental Representative.

1.9 SIGNS AND NOTICES

- .1 Signs and notices for safety and instruction shall be in both official languages or graphic symbols conforming to CAN/CSA-Z321.
- .2 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or when directed by Departmental Representative.

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 PRODUCTS/ MATERIAL AND EQUIPMENT

- .1 Use NEW products/material and equipment unless otherwise specified. The term "products" is referred to throughout the specifications.
- .2 Use products of 1 manufacturer for material and equipment of the same type or classification unless otherwise specified.
- .3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.
- .5 Provide metal fastenings and accessories in the same texture, colour and finish as base metal in which they occur.
 - .1 Prevent electrolytic action between dissimilar metals.
 - .2 Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- .6 Fastenings which cause spalling or cracking are not acceptable.
- .7 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .8 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .9 Bolts may not project more than 1 diameter beyond nuts.
- .10 Types of washers as follows:
 - .1 Plain type washers: use on equipment and sheet metal.
 - .2 Soft gasket lock type washers: use where vibrations occur.
 - .3 Resilient washers: use with stainless steel.
- .11 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
- .12 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.
- .13 Store products in accordance with suppliers' instructions.
- .14 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction:
 - .1 Use primer or enamel to match original.

- .2 Do not paint over nameplates.

1.2 QUALITY OF PRODUCTS

- .1 Products, materials and equipment (referred to as products) incorporated into work shall be new, not damaged or defective, and of the best quality (compatible with the specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of the products provided.
- .2 Defective products will be rejected regardless of previous inspections.
 - .1 Inspection does not relieve responsibility, but is precaution against oversight or error.
 - .2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Retain purchase orders, invoices and other documents to prove that all products utilized in this Contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.
- .4 Should any dispute arise as to quality or fitness of products, the decision rests strictly with the Departmental Representative based upon the requirements of the Contract documents.
- .5 Unless otherwise indicated in the specifications, maintain uniformity of manufacture for any particular or like item throughout the building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY OF PRODUCTS

- .1 Immediately upon signing the Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.
- .2 If delays in supply of products are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial

action may be authorized in ample time to prevent delay in performance of the work.

- .3 In event of failure to notify Departmental Representative at the start of work and should it subsequently appear that the work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character, at no increase in either the Contract price or the Contract time.

1.4 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect products in accordance with the manufacturer's instructions.
 - .1 Do not rely on labels or enclosures provided with products.
 - .2 Obtain written instructions directly from the manufacturer.
- .2 Notify Departmental Representative in writing of conflicts between the specifications and the manufacturer's instructions so that the Departmental Representative may establish the course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to require removal and re-installation at no increase in either the Contract price or the Contract time.

1.5 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING

- .1 Products are specified by "**Prescriptive**" specifications: select any product meeting or exceeding specifications.
- .2 Products specified under "**Acceptable Products**" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.
- .3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.
- .4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Special Instructions to Tenderers".
- .5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative obtain from manufacturer and independent laboratory report showing that the product meets or exceeds the specified requirements.

1.6 SUBSTITUTION
AFTER CONTRACT
AWARD

- .1 No substitutions are permitted without prior written approval of the Departmental Representative.
- .2 **Proposals for substitution may only be submitted after Contract award.** Such request must include statements of respective costs of items originally specified and the proposed substitution.
- .3 Proposals will be considered by the Departmental Representative if:
 - .1 products selected by tenderer from those specified are not available;
 - .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
 - .3 alternative product to that specified, which is brought to the attention of considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
- .4 **Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.**
- .5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 RELATED WORK

- .1 Refer to every technical section for waste management and disposal.

1.2 DEFINITIONS

- .1 Waste Audit (WA): relates to projected waste generation. Involves controlled separation of waste.
- .2 Waste Reduction Workplan (WRW): a written report which addresses opportunities for reduction, re-use or recycling of materials.
- .3 Materials Source Separation Program (MSSP): consists of a series of ongoing activities to separate re-usable and recyclable waste material into material categories from other types of waste at point of generation.

1.3 MATERIALS SOURCE SEPARATION

- .1 Before project start-up, prepare Materials Source Separation Program. Provide separate containers for re-usable and/or recyclable materials of the following:
 - .1 Gypsum board.
 - .2 Metals.
 - .3 Wood.
 - .4 Plastics
 - .5 Other materials as indicated in technical sections.
- .2 Implement Materials Source Separation Program for waste generated on project in compliance with approved methods and as approved by Departmental Representative.
- .3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .4 Locate separated materials in areas which minimize material damage.

1.4 DIVERSION OF MATERIALS

- .1 Create a list of materials to be separated from the general waste stream and stockpiled in separate containers, to the approval of the Departmental Representative and consistent with applicable fire regulations.
 - .1 Mark containers.
 - .2 Provide instruction on disposal practices.

1.5 STORAGE, HANDLING AND APPLICATION

- .1 Do work in compliance with Waste Reduction Workplan.
- .2 Handle waste materials not re-used, salvaged, or recycled in accordance with appropriate regulations and codes.
- .3 Materials in separated condition: collect, handle, store on site, and transport off-site to an approved and authorized recycling facility.
- .4 Materials must be immediately separated into required categories for re-use or recycling.
- .5 Unless specified otherwise, materials for removal become the Contractor's property.
- .6 On-site sale of salvaged/recyclable material is not permitted.
- .7 **Provide Departmental Representative with receipts** indicating quantity of material delivered to landfill.
- .8 **Provide Departmental Representative with receipts** indicating quantity and type of materials sent for recycling.

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 SUBMISSION

- .1 Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- .2 Revise content of documents as required before final submittal.
- .3 Phasing of submission:
 - .1 2 weeks before substantial performance of the work for Phase 1 construction, submit to Departmental Representative 4 final copies of operation and maintenance manuals.
 - .2 2 weeks before substantial performance of the work for Phase 2 construction, submit to Departmental Representative 4 final copies of Phase 2 supplements to operation and maintenance manuals.
- .4 Ensure spare parts, maintenance materials and special tools provided are new, neither damaged nor defective, and of same quality and manufacture as products provided in work.
- .5 If requested, furnish evidence as to type, source and quality of products provided.
- .6 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.2 FORMAT

- .1 Organize data in the form of an instructional and electronic manual.
- .2 Binders: vinyl, hard covered, 3 "D" ring, loose leaf 219x279 mm with spine and face pockets.
- .3 Cover: identify each binder with typed or printed title "Project Record Documents"; list title of project and identify subject matter of contents.
- .4 Arrange content by systems under section numbers and sequence of Table of Contents.
- .5 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .6 Text: manufacturer's printed data, or typewritten data.
- .7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.3 CONTENTS, EACH VOLUME

- .1 Table of contents – provide the following:

- .1 Title of project.
Date of submission.
- .2 Names, addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
- .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product data: mark each sheet to clearly identify products and component parts, and data applicable to installation. Delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.4 AS-BUILT DOCUMENTS

- .1 **Contract drawings** and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .2 Field changes of dimension and detail.
 - .3 Changes made by change orders.
 - .4 Details not on original Contract drawings.
 - .5 References to related shop drawings and modifications.
- .2 **Contract Specifications:** legibly mark each item to record actual "Workmanship of Construction", including:
 - .1 Manufacturer, trade name, and catalogue number of each "Product/Material" actually installed, particularly optional items and substitute items.
 - .2 Changes made by addenda and change orders.
- .3 As-built information:
 - .1 Record changes in red ink.

- .2 Mark on 1 set of drawings, specifications and shop drawings at completion of project and, before final inspection, neatly transfer notations to second set.
- .3 Provide 1 set of CDs in AutoCAD, Revit and PDF file format with all as-built information on the CDs.
- .4 Submit all sets for the Departmental Representative.

1.5 EQUIPMENT AND SYSTEMS

- .1 Operating procedures – include the following:
 - .1 Start-up, break-in, and routine normal operating instructions and sequences.
 - .2 Regulation, control, stopping, shutdown, and emergency instructions.
 - .3 Summer, winter, and any special operating instructions.
- .2 Maintenance requirements – list routine procedures:
 - .1 Replace missing or damaged shingles
 - .2 Remove organic growth from shingles
 - .3 Replace missing or damaged flashings
- .3 Provide servicing and lubrication schedule, and list of lubricants required.
- .4 Include manufacturer's printed operation and maintenance instructions.
- .5 Include sequence of operation by controls manufacturer.
- .6 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .7 Provide installed control diagrams by controls manufacturer.
- .8 Provide Contractor's coordination drawings with installed colour coded piping diagrams.
- .9 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .10 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .11 Additional requirements: as specified in individual specification Sections.

1.6 MANUFACTURER'S DOCUMENTATION REPORTS

- .1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and system, instruct Departmental Representative's

indicated facility's personnel, and provide detailed written report that demonstration and instructions have been completed.

- .2 Departmental Representative will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

1.7 SPARE PARTS

- .1 Provide spare parts in quantities specified in individual specification Sections.
- .2 Provide items of same manufacture and quality as items in work.
- .3 Deliver to on-site location as directed; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Departmental Representative. Include approved listings in maintenance manual.
- .5 Obtain receipt for delivered products and submit to Departmental Representative.

1.8 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in work.
- .3 Deliver to on-site location as directed; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Departmental Representative. Include approved listings in maintenance manual.
- .5 Obtain receipt for delivered products and submit to Departmental Representative.

1.9 SPECIAL TOOLS

- .1 Provide special tools in quantities specified in individual specification Sections.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue all items:
 - .1 Submit inventory listing to the Departmental Representative.
 - .2 Include approved listings in maintenance manual.

**1.10 WARRANTIES,
BONDS, TEST
REPORTS,
INSPECTION
REPORTS**

- .1 Separate each Document with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier and manufacturer with name, address, and telephone number of responsible principal.
- .3 Obtain Warranties, Bonds, Test Results, Inspection Reports executed in duplicate by subcontractors, suppliers, manufacturers, and inspection agencies within 10 days after completion of the applicable item of work.
- .4 Except for items put into use with the Departmental Representative's permission, leave date of beginning of time of warranty until the date of substantial performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

1.11 COMPLETION

- .1 Submit a written certificate that the following have been performed:
 - .1 Work has been completed and inspected for compliance with the Contract documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced, and are fully operational.
 - .4 Certificates required by the Boiler Inspection Branch, Fire Commissioner of Canada, and utility companies have been submitted.
 - .5 Operation of systems has been demonstrated to the personnel indicated by the Departmental Representative.
 - .6 Work is complete and ready for final inspection.

2 PRODUCTS (NOT APPLICABLE)

3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Work included: Labour, materials, equipment and services necessary to provide rough carpentry for but not limited to roof overhangs, reframing, sheathing, balcony and deck upgrading,
- .2 strapping, parapet caps, fascias, and trims.

1.2 REFERENCES

- .1 National Building Code of Canada (NBC) – Part 9
- .2 CSA B111 Wire Nails, Spikes and Staples.
- .3 CAN/CSA-G164 Hot Dip Galvanizing of Irregularly Shaped Articles.
- .4 CAN/CSA 086.1 Engineering Design in Wood
- .5 CSA O121 Douglas Fir Plywood.
- .6 CAN/CSA-O141 Softwood Lumber.
- .7 CSA O151 Canadian Softwood Plywood.
- .8 CAN/CGSB-71.26 Adhesive for Field-Gluing Plywood to Lumber Framing and Metal Studs.
- .9 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.

1.3 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.

2 PRODUCTS

2.1 LUMBER MATERIAL

- .1 Shall be in accordance with NBC Part 9 Requirements as a minimum.
- .2 All wood except cedar to be pressure treated in accordance with Specification 06 05 73. See note on treatment of plywood sheathing in following section.
- .3 Framing lumber: to match existing size and grade, unless noted on the drawings or as directed by the Departmental Representative.
 - .1 Report any discrepancies in grading of existing lumber to Departmental Representative.

- .4 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .5 Furring, blocking, nailing strips, cants, curbs, fascia backing, and sleepers:
 - .1 Board sizes: No. 2 or better grade, Hem Fir.
 - .2 Dimension sizes: No. 2 or better grade, Hem Fir.
 - .3 Post and timbers sizes: No. 2 or better grade, Hem Fir.
- .6 Strapping and blocking in drainage cavity
 - .1 3/4" x 1-1/2" (min) wide SPF plywood, treated after cutting and kiln dried after treatment
- .7 New Roof Fascia Boards at Eaves and Rakes (Group 1 buildings):
 - .1 2x western red cedar, S1S.
 - .2 Moisture content 19% or less.
 - .3 Grade: Select Knotty: Knots are sound and tight. Other characteristics are limited so they do not detract from the end use intended.
 - .1 Grading Rule Paragraph:
 - .1 NLGA 204a
 - .2 WCLIB 111-e
 - .3 WWPA N/A

2.2 PANEL MATERIALS

- .1 Material requirements to meet NBC Part 9 Requirements as a minimum unless specified otherwise.
- .2 All plywood except plywood below PVC membranes is to be pressure treated in accordance with Specification 06 05 73. Plywood below PVC membranes is to have the underside of the installed sheet field treated with preservative.
- .3 Canadian softwood plywood (CSP): to CSA O151, sheathing grade for walls, roofs and decks.
- .4 Typical edge requirement and minimum thicknesses of plywood are as follows unless noted otherwise in the drawings:
 - .1 Wall sheathing: 1/2" (12.5 mm) thickness for stud spacing less than or equal to 24" (610 mm) on centre unless noted otherwise. Square edges.
 - .2 Balcony and deck sheathing: 5/8" (15.5 mm) tongue and groove for joist spacing equal to or less than 19.2" (488 mm) on centre. 3/4" (19 mm) tongue and groove for joist spacing up to 24" (610 mm) or less unless noted otherwise. If the plywood is square edged then provide 2x wood blocking at unsupported panel edges.
 - .3 Roof sheathing: 12.5 mm (1/2") with square edges can be used for rafter spacing up to 406 (16") and for rafter spacing of up to 610 (24") if the unsupported edges have H-clips or the

sheathing has tongue and groove edges. Alternatively, square edge sheathing with 2x4 blocking can be used in lieu of H-clips.

- .4 Parapet cap liner flashing support: 5/8" (15.5 mm) minimum.

2.3 ACCESSORIES

- .1 Corrosion resistant coatings on connectors and fasteners is as follows:
 - .1 For non-ACQ treated wood and interior of the exterior sheathing plane and moisture barrier, all connectors to be a minimum of G90 hot dipped galvanizing and fasteners to be hot dipped galvanized. Screw fastener coatings are as noted below. Typical application is in stud cavities, heated attics, below decks in heated spaces.
 - .2 For non-ACQ treated wood and in covered unheated areas not subject to direct moisture, all connectors to be a minimum of G185 hot dipped galvanizing and fasteners to be hot dipped galvanized. Screw fasteners are as noted below. Applies to balcony soffits, parapets, roof attics and unheated decks.
 - .3 For non-ACQ treated wood and in exposed conditions subject to direct moisture, all connectors to be a minimum of G185 hot dipped galvanizing and fasteners to be hot dipped galvanized. Screw fasteners are as noted below. Applies to exposed panels, fascia boards, cedar boards, deck boards.
 - .4 For ACQ treated wood in all locations all connectors and fasteners to be stainless steel unless noted otherwise. Do not combine stainless connectors with non-stainless fasteners.
- .2 Hot dipped galvanized fasteners to meet the following requirements:
 - .1 Hot dipped galvanizing to meet CAN/CSA-G164 and ASTM A653. Nails, spikes and lag screws when hot dipped galvanized are to meet ASTM A153 Class D at 1.0 oz of zinc per sq ft of surface area of the fastener. Bolts, washers and nuts are to meet ASTM A153 Class D at 1.25 oz of zinc per sq ft of surface area of the fastener.
- .3 Corrosion protected screws:
 - .1 Corrosion resistant coatings for screws to meet the following requirement:
 - .1 For non-exposed conditions interior of the exterior sheathing plane and moisture barrier:
 - .1 Zinc plated with a yellow chromate conversion coating.
 - .2 Coating to meet 50 hours of salt spray test to ASTM B117.
 - .2 For exposed conditions and in covered unheated areas not subject to direct moisture exterior of the moisture barrier or subject to exterior humidity (not including ACQ wood applications)
 - .1 Zinc rich base coat with conversion coating and a baked on protective barrier coating.
 - .2 Coating to meet 500 hours of salt spray test to ASTM B117.
 - .3 Approved products:

- .1 Grabbergard Exterior All-Weather Screws by Grabber Construction Products.
- .3 For exposed conditions in exposed conditions subject to direct moisture (not including ACQ wood applications)
 - .1 Zinc rich base coat with conversion coating and a baked on protective barrier coating.
 - .2 Coating to meet 1000 hours of salt spray test to ASTM B117.
 - .3 Approved products:
 - .1 Grabbergard Exterior All-Weather Screws by Grabber Construction Products.
 - .2 DT1500 or DT1700 coated screws by Leland Industries
- .4 Stainless steel screws:
 - .1 For exposed and unexposed conditions where screws are in contact with ACQ wood. Can also be used in fully exposed conditions subject to moisture such as deck boards.
 - .1 Approved products:
 - .1 Stainless steel wood screws.
 - .2 DT1700 coated screws by Leland Industries.
 - .3 Approved alternate.
- .5 Stainless steel components to meet the following requirements.
 - .1 Nails and spikes (when stainless steel) are to be, 304 or 316 Series, purpose made for replacement of conventional nails.
 - .2 Stainless steel screws to be 304 or 316 Series.
 - .3 Stainless steel bolts to be 304 or 316 Series.
 - .4 Connectors (hangers, framing anchors) to be stainless steel Type 316L.
- .6 Screws
 - .1 #8 minimum size (length to suit) wood screws with Robertson flat head.
 - .2 Fabricate to ANSI B18.6.4
- .7 Nails, spikes and staples:
 - .1 Fabricate to CSA B111.
 - .2 Minimum nail length to be 2.5" (64 mm). Refer to Part 9 for other minimum fastener requirements. Refer to the drawings for specific requirements.
- .8 Staples:
 - .1 Fabricate to CSA B111.
 - .2 16 ga. 304 Series stainless steel staples compatible with material, sheathing, framing or other substrate being fastened. Length to be 2" (51 mm). Zinc coated staples will not be accepted.
- .9 Bolts:
 - .1 Size to be 1/2" (12.5 mm) minimum diameter unless indicated otherwise, complete with nuts and washers

- .10 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws, explosive actuated fastening devices, recommended for purpose by manufacturer and as approved by the Departmental Representative.
- .11 Deck/balcony sheathing waterproof adhesive to CGSB 71-GP-26M, cartridge loaded.
 - .1 Acceptable products:
 - .1 PL400 by PL Adhesives and Sealants
 - .2 Alternate product approved by Departmental Representative.
- .12 Sill gasket: Polyfoam by Foampak or approved equal.
- .13 Reinforcing Straps and Joist Hangers (connectors):
 - .1 Metal strap anchor or hanger, sizes as noted, as manufactured by Simpson Strong Tie Company Inc. or approved equivalent.
 - .2 For custom made connectors from welded steel flat bar and angle, minimum requirement in all cases is hot dipped galvanized.

3 EXECUTION

3.1 GENERAL

- .1 Comply with requirements of NBC Part 9 minimum, supplemented by the following paragraphs and contract drawings.
- .2 Protect new wood products, connectors and fasteners from weather and moisture.
- .3 All lumber must be below 19% moisture content at the time of installation.
- .4 Treated wood must be below 15% moisture content at the time of installation.
- .5 Lumber and plywood that is installed must be protected from moisture. Any lumber that becomes wet must be dried to the moisture contents noted above before covering up.

3.2 REPLACEMENT OF DAMAGED FRAMING

- .1 Where directed by the Departmental Representative, replace existing damaged lumber framing with new lumber to match size and grade of existing element, unless otherwise shown on the drawings or as directed by the Departmental Representative.
- .2 Replace entire length of damaged member. No splicing or scabbing to existing elements allowed without prior approval of Departmental Representative.
- .3 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

- .4 Countersink bolts where necessary to provide clearance for other work.
- .5 Provide temporary support and shoring in accordance with WCB for the structure while working on structural members. Notify Departmental Representative of any conditions, which appear to be unsafe.
- .6 Level and re-align building structure and framing to original grades, levels and elevations true, plumb and square as required to correct shifting due to deterioration of structural elements.

3.3 REINFORCING AT GUARD POST ANCHORS

- .1 At guard posts connections for intermediate posts, install guard post reinforcing straps, nailed to the exterior face of the rim joist and to the side of the balcony or deck joist framing perpendicularly to the rim joist, as detailed on the drawings. Provide a minimum of two strap anchors per anchor post complete with blocking, installed on either side of the guard post anchor location unless noted otherwise.

3.4 REPLACEMENT OF WALL SHEATHING

- .1 Install new plywood sheathing over exterior stud walls. Thickness of new plywood to match existing unless noted otherwise. The following minimum requirements apply to all walls which are not noted as being structural shearwalls on the drawings. For structural shearwalls, install the sheathing as noted on the drawings with blocking when required. In no case is the sheathing to be installed less than the minimum requirements.
- .2 Install plywood sheathing so that vertical joints are staggered.
- .3 Provide an edge gap of 3/32" (2 mm) between sheets of plywood unless wood is exposed to moisture in which case increase edge gaps to 1/8" (3 mm). Maximum gap is 1/4" (6 mm).
- .4 Fasten plywood sheathing to stud wall at 6" (150 mm) on centre along the perimeter of the sheet and at 12" (300 mm) on centre along intermediate supports.
- .5 Soffit and overhang locations: Fasten plywood sheathing to framing at 6" (150 mm) on centre along the edges of the sheet and at 12" (300 mm) on centre along intermediate supports with a minimum #10 – 64 mm screws.

3.5 DECK JOIST STRENGTHENING

- .1 Install sistered joists next existing joists as noted in the drawings for small roof decks. New joists to be nailed and glued to the existing joists with 2 rows of 3" nails at 6"oc. Joists to extend full length of existing and bear on existing walls or be supported by joist hangers.

3.6 REPLACEMENT AND
RE-SLOPING OF
BALCONY/DECK/
ROOF SHEATHING

- .2 Electrical services and plumbing lines to be temporarily removed and reinstalled after joist work is completed. No cutting of new joists is permitted.

- .1 For decks and balconies where full sheathing replacement is required, install sloped shims or sleepers over balcony/deck joists to provide surface slope using compound cut materials, adhesive and screws where required. Install blocking as required to support the sheathing at the building face. Install new sheathing over sloped shims or sleepers and joists after foam insulation (air barrier) is installed in the joist cavity.
- .2 For roofs or decks where partial sheathing replacement is required for decayed material, reconstruct damaged framing areas including structural members to provide full support of the sheathing as instructed by the Departmental Representative. Match existing sheathing thickness unless noted otherwise. Slope new sheathing to match existing slopes. No sheathing replacement is to be done on the main roofs or large roof decks until the Departmental Representative has approved the repairs.
- .3 For roofs or decks where full sheathing replacement is required, install sloped shims or sleepers over the roof/deck area to provide surface slope using compound cut materials, adhesive and screws where required. Install blocking as required to support the sheathing at the building face and perimeter. Install new sheathing over sloped shims or sleepers and joists after foam insulation (air barrier) is installed in the joist cavity. Reconstruct damaged framing areas including structural members to provide full support of the sheathing as instructed by the Departmental Representative. No sheathing replacement is to be done on the main roofs or large roof decks until the Departmental Representative has approved the repairs.
- .4 For balconies and decks apply a bead of adhesive on the top edges of supporting sleepers or joists as per glue manufacturer's instructions.
- .5 Install sheathing with surface grain at right angles to joists.
- .6 Install sheathing so that end joints parallel to joists/trusses are staggered.
- .7 Provide an edge gap of 3/32" (2 mm) between sheets of plywood unless wood is exposed to moisture in which case increase edge gaps to 1/8" (3 mm). For tongue and groove joints provide 1/16" (1 mm) gap.
- .8 All sheathing joints running at 90 degrees to the joists are to be tongue and groove whenever possible for decks and balconies. Joints which cannot be made tongue and groove are to be fully blocked with minimum of 2x4 framing members. Roof sheathing does not require tongue and groove joints.

- .9 Fasten plywood sheathing to roof trusses/rafters with nails at 6" (150 mm) on centre along the perimeter of the sheet and at 12" (300 mm) on centre along intermediate supports unless noted otherwise in the drawings.
- .10 Fasten plywood sheathing to balcony or deck joists with screws at 6" (150 mm) on centre along the perimeter of the sheet and at 12" (300 mm) on centre along intermediate supports unless noted otherwise in the drawings.

3.7 INSTALLATION OF STRAPPING, FURRING AND BLOCKING

- .1 Install strapping as required to space-out and support exterior cladding as shown, spaced at 8" (200 mm) on centre. Strapping to be at framing locations where possible. The minimum gap between strapping is to be ½" (12mm).
- .2 Fasten strapping to sheathing and support framing (where possible) at 8" (200 mm) o.c. horizontally and vertically.
- .3 Soffit and overhang locations: Fasten strapping to sheathing and support framing (where possible) at 6" (150 mm) o.c. at ends and corners, and 12" (300 mm) o.c. along intermediate supports with a minimum #10 – 2.5" (63 mm) screws.
- .4 Install furring and blocking as required to space-out and support wall and ceiling finishes, facings, fascia, soffit, and other work as required.
- .5 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .7 Install sleepers, wood cants, fascia backing, nailers, curbs and other wood supports as required.
- .8 Where rim joists are removed, install new rim joists to match. Ensure new rim joist is installed tight between top of wall plate the underside of floor sheathing.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Work includes labour, materials, equipment and services necessary to provide and install asphalt shingles.

1.2 REFERENCES

- .1 CSA A123.1-[M1979] Asphalt Shingles Surfaced with Mineral Granules.
- .2 CAN-CSA A123.5 M90 Asphalt Shingles With Fiberglass Felt Core
- .3 CAN3-A123.51-[M85] Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.
- .4 CSA B111-[1974] Wire Nails, Spikes and Staples.
- .5 CAN/CGSB-37.4-[M89] Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.
- .6 CAN/CGSB-37.5-[M89] Cutback Asphalt Plastic Cement.
- .7 CAN/CGSB-51.32-[M77] Sheathing Membrane, Breather Type.
- .8 CSA A123.3-M1979 Organic No. 15 Felt.
- .9 CGSB 37-GP-4Ma Lap Cement.
- .10 RGC Roofing Practices Manual (Current Edition)
- .11 SMACNA (Sheet Metal and Airconditioning Contractors National Association) Architectural Sheet Metal Manual (Current Edition)

1.3 QUALIFICATIONS

- .1 Roofing Contractor to be officially recognized as an authorized contractor by the roofing materials manufacturer.
- .2 Employ skilled applicators approved by membrane manufacturer.

1.4 WARRANTY

- .1 Asphalt Shingles:
 - .1 Provide the Departmental Representative, through the "Shingle Manufacturer" a material and labour guarantee stating that the shingles will be repaired or replaced for a total of five (5) years after the final completion date, non pro-rated (exclusive of costs for tear-off of shingles and flashings and metal work) in the event of a manufacturing defect which results in leaks.
 - .2 Provide the Departmental Representative, through the "Shingle Manufacturer" a transferable, pro-rated "replacement shingles" warranty for years six (6) to forty (40).

1.5 MOCK-UP

- .1 Construct mock-ups for Departmental Representative review of:
 - .1 Typical Ridge, valley, hip, eave, rake and roof to wall interface.
 - .2 Typical gutter, rainwater leader and splash block.
 - .3 Typical button vent, plumbing vent, electrical mast and flue penetrations.
- .2 Construct mock-up of one selected roof area. Accepted mock-up may form part of completed work
- .3 Allow 72 hours for inspection of mock-up by Departmental Representative before proceeding with remaining work.

1.6 QUALITY ASSURANCE

- .1 Conform to the latest guarantee standards of the RCABC as published in the RGC ("RCABC Guarantee Corporation") roofing practices manual for a 10-year guarantee.
- .2 Installer Qualifications: Only competent, qualified tradesmen experienced with shingle roofing shall execute the work of this section.
- .3 A crew of qualified tradesmen is defined as follows:
 - .1 The foreman and at least one other man shall have a minimum of 5 years experience in the installation of asphalt shingle roofs; the balance of the crew installing the asphalt shingles and accessories must demonstrate a knowledge of roofing practices and have a minimum of one year of experience in shingle roofing.
 - .2 The foreman and one other member of the crew must have experience in the installation of asphalt shingles of the same manufacturer.
 - .3 All workmen shall install all roofing materials in strict conformance with the manufacturer's latest printed instructions for materials and installation methods.
 - .4 Workman shall proceed with the installation of materials and accessories only where the substrate is in a condition suitable for the application.
 - .5 Workman shall be knowledgeable and experienced in performing their duties in a safe and practical manner and in compliance with all safety standards and requirements.

1.7 SUBMITTALS

- .1 Submit material samples as requested by the Departmental Representative
- .2 Provide two samples of the shingles in the approved colour.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Provide bills of lading to the Departmental Representative as requested.
- .2 Materials shall be stored on the site in a location approved by the Departmental Representative.
- .3 Provide and maintain dry, off-ground weatherproof storage.
- .4 Deliver and store all new materials in their original packaging, bearing the Manufacturer's name, related standards and any other specifications or reference standards.
- .5 Protect and permanently store all materials in a dry, well-ventilated and weatherproof location. Remove from this location only materials to be used the same day. Maintain storage location at minimum +10 °C. Keep materials away from open flame or welding sparks. Prevent water-based materials from freezing.
- .6 Avoid stockpiling materials on suspended areas, which could at certain places affect the loading of such areas.

1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Install roofing on dry sheathing, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.
- .2 Before commencing work, Contractor to ensure that forecasted meteorological conditions shall permit work to be carried out without interruption during the course of the day.
- .3 Minimum temperature for solvent-based adhesive is -5 °C.
- .4 The work will not be left unprotected at the end of each working day or during any interruption of work.
- .5 If water penetrates through the assembly due to inadequate protection, Contractor to cut and inspect damages, remove, replace and re-install all materials at his own cost, to eliminate all traces of water in the assembly.
- .6 Roofing must be watertight at end of each shift.

1.10 PROTECTION

- .1 Protect all adjacent surfaces from any damage that may result from the work of this section. If required, the contractor shall make good any deterioration resulting from his work in progress.
- .2 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage.

2 PRODUCTS

2.1 ROOFING MATERIALS

- .1 Asphalt Shingles:
 - .1 To CSA A123.1 [M1979] Asphalt Shingles Surfaced With Mineral Granules and / or CAN-CSA A123.5 M90 Asphalt Shingles With Fiberglass Felt Core and;
 - .2 SBS modified 3-tab asphalt shingle product as selected by contractor from the RGC Roofing Practices Manual's list of RGC / RoofStar acceptable asphalt shingle products for Low Slope Application.
 - .1 Interlocking and laminated/architectural style asphalt shingles are not permitted.
- .2 Accessories:
 - .1 Sheathing Paper: to CAN/CGSB-51.32-[M77]
 - .2 Roofing Underlayment:
 - .1 To CSA A123.3-M1979 and;
 - .2 Nail-applied, polypropylene synthetic underlayment product as selected by contractor from the RGC Roofing Practices Manual's list of RGC / RoofStar acceptable products for Eave Protection & Underlayment for shingle roofing.
 - .3 Eave and Valley Protection:
 - .1 To CSA A123.3-05 (2010) and;
 - .2 Self-adhering, SBS modified bituminous membrane product as selected by contractor from the RGC Roofing Practices Manual's list of RGC / RoofStar acceptable products for Eave Protection & Underlayment for shingle roofing.
 - .4 Lap Cement: Fibrated, cutback asphalt lap cement conforming to CAN/CGSB-37.4-[M89].
 - .5 Roofing Cement: Cutback asphalt plastic cement conforming to CAN/CGSB-37.5-[M89].
 - .6 Nails: 10mm (3/8") head, corrosion-resistant roofing nails of galvanized steel to CSA B 111-[1974], length sufficient to penetrate 19mm (3/4") into deck.
 - .7 Roof Vents: Pre-painted metal roof vents complete with 18 x 18 Mesh, 0.009", minimum 70% open area, stainless steel insect screen or pre-approved alternate.
 - .1 Colour: To be determined by Departmental Representative from manufacturer's standard range of colours.
 - .8 Plumbing Penetrations: Lead plumbing stacks and caps.
 - .9 Sheet Metal Rake and Eave Drip Flashings and Step Flashings: Min 24 gauge prefinished sheet steel. Refer to specification section "07 62 00 Sheet Metal Flashings and Trim"
 - .1 Colour: As selected by Departmental Representative from manufacturer's standard range of colours.

- .10 Sheet Metal Valley and Fascia Board Cladding (at eave and rake fascias): Min 24 gauge prefinished sheet steel. Refer to specification section "07 62 00 Sheet Metal Flashings and Trim"
- .1 Colour: As selected by Departmental Representative from manufacturer's standard range of colours.

2.2 REMOVAL OF EXISTING ROOFING

- .1 Remove existing asphalt shingles, flashings and underlayment and expose roof strapping.
- .2 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.
- .3 Departmental Representative to inspect roof sheathing. Take up, cut out or remove areas of roof sheathing affected by fungal or insect attack as directed on site by Departmental Representative.

2.3 INSTALLATION OF NEW SHEATHING

- .1 Replace identified affected areas of roof sheathing with new plywood sheathing. Stagger butt joints with existing material by 2'-0".

2.4 WORKMANSHIP

- .1 Install asphalt shingles in accordance with the RCABC system sheet specification STR-AS and CAN3-A123.51-[M85] Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.
- .2 Install bottom step flashing (soakers) interleaved between shingles at vertical interfaces.

2.5 EXAMINATION OF ELEMENTS

- .1 Examine work areas and immediately inform Departmental Representative in writing of any defects.
- .2 Prior to commencement of work ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.
- .3 Contractor shall inspect and approve substrate condition prior to commencement of work. Commencement of work implies acceptance of the surface condition.

2.6 FIELD QUALITY CONTROL

- .1 The contractor is responsible to notify the Departmental Representative 48 hours prior to the commencement of the work.
- .2 All deficiencies are to be corrected.

2.7 CLEANING

- .1 At completion of work, all refuse resulting from the work of this Section to be removed from site.
- .2 Clean all adjacent surfaces affected by roofing work.

2.8 EXTRA MATERIALS

- .1 Provide two, unopened bundles of the specified shingles to the Departmental Representative at project completion.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Work includes: labour, materials, equipment and services necessary to provide flashings and trim as indicated including: cross cavity, cap, base, window and door head and sill, balcony, deck, cricket, saddle, roof flashings, counter flashings, eave and rake board cover flashings, gutters and downpipes.

1.2 REFERENCES

- .1 Canadian Sheet Steel Building Institute (CSSBI) S8-2001: Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products.
- .2 AAMA 621 Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
- .3 ASTM A792 /A792M Specification for Steel Sheet, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process with a minimum zinc coating designation Z150.
- .4 ASTM A653/653M Specification for Sheet Steel, Zinc-Coated or Zinc-Iron Alloy Coated by the hot dip process, with a minimum zinc coating designation Z275
- .5 ASTM D523 Test Method for Specular Gloss.
- .6 ASTM B32 Specification for Solder Metal.
- .7 Aluminium Association Designation System for Aluminium Finishes.
- .8 Aluminium Association Aluminium Sheet Metal Work in Building Construction.
- .9 CSA B111 Wire Nails, Spikes and Staples.
- .10 CAN/CGSB-93.1 Sheet, Aluminum Alloy, Prefinished, Residential.
- .11 Canadian Roofing Contractors Association (CRCA).
- .12 SMACNA Architectural Sheet Metal Manual.
- .13 CGSB 1-GP-171M, Type 1 Inorganic Zinc Rich Primer
- .14 SSPC Paint 20, Type 1-B Inorganic Zinc Rich Primer
- .15 Roofing Contractors Association of British Columbia (RCABC).

1.3 SUBMITTALS

- .1 Submit duplicate 150 x 150 mm samples of each type of sheet metal material, colour and finish.
- .2 Submit documentation identifying sheet metal source, testing results to specified standards and finish.

1.4 MOCK-UPS

- .1 Provide for approval prior to fabrication and installation and as part of the exterior wall assembly, mock-up for review by the Departmental Representative, a sample of each flashing assembly detailed for the project, including cap and through wall flashing, window/door head and sill flashing, base and drip edge flashing and custom flashing fabrications.

1.5 DESIGN REQUIREMENTS

- .1 General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- .2 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - .1 Temperature Change: [120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces] <Insert temperature change>.

1.6 WARRANTY ON FINISHES

- .1 Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
- .2 Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - .1 Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - .2 Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - .3 Film Integrity: there shall be no evidence of cracking, chipping, peeling, crazing, spotting, flaking, checking or loss of adhesion.
- .3 Manufacturer's Finish Warranty Period: 20 years from date of Substantial Completion.

2 PRODUCTS

2.1 PREFINISHED SHEET STEEL

- .1 General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

- .2 Base Metal Base Metal to be:
 - .1 Aluminium-zinc coated (Galvalume) steel sheet conforming to the requirements of ASTM A792 (or A792M) with a minimum coating of AZ50(AZM150).
 - .2 24 gauge thickness.
- .3 Exposed Coil-Coated Finish:
 - .1 Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.
- .4 Color: As selected by Departmental Representative from Manufacturer's standard colour range minimum 30 colours. Both top and underside of flashing exposed to view to be finished with the same colour.
- .5 Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

2.2 PREFINISHED GALVANIZED STEEL WITH FACTORY APPLIED POLYVINYL CHLORIDE

- .1 Base Metal to be:
 - .1 Zinc coated sheet steel conforming to the requirements of ASTM A653 (or A653M as applicable) with a minimum zinc coating of G90 (Z275).
 - .2 Aluminium-zinc coated (Galvalume) steel sheet conforming to the requirements of ASTM A792 (or A792M) with a minimum coating of AZ50(AZM150)..
- .2 Polyvinyl chloride coating minimum thickness: 10 mil
- .3 PVC Coating to be heat fused to the base metal.
- .4 Colour from Manufacturer's standard range as selected by Departmental Representative.
- .5 Prefinished steel must be approved in writing by the deck membrane manufacturer for use with their PVC deck membrane.

2.3 UNFINISHED STEEL

- .1 Form all customized flashings and other unfinished steel flashing products including vents, saddles, etc. of 24 Ga. minimum sheet steel according to the following:
 - .1 Base Metal to be:
 - .1 Aluminium-zinc coated (Galvalume) steel sheet conforming to the requirements of ASTM A792 (or A792M) with a minimum coating of AZ50(AZM150).

- .2 Formed flashings to be typically folded and sealed and as approved by Departmental Representative. Avoid soldering flashings. Use clinched joints whenever possible.
- .3 Paint off site after fabrication to match prefinished flashing. Type and method of paint application must be preapproved by the Departmental Representative. Paint must be a baked on finish.

2.4 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .3 Touch-up paint: as recommended by prefinished material manufacturer.
- .4 Cleats, clips, and splice plates: of same material, coating, and temper as sheet metal, minimum 50mm wide. Thickness same as sheet metal being secured.
- .5 Fasteners:
 - .1 Into wood:
 - .1 Steel pan head screws with coarse thread for wood.
 - .1 #8 x 1" (minimum) long stainless steel suitable for metal flashing application. Stainless to be 300 Series when exposed otherwise 300 or 400 Series is acceptable.
 - .2 For exposed conditions use hex-head stainless steel screws, with neoprene washer, hex heads coloured to match flashing.
 - .2 Into masonry, concrete, stone:
 - .1 One piece steel screw set into predrilled hole in concrete or masonry for medium duty connections.
 - .1 1/4" diameter x 1-3/4" long Kwik Con II Stainless by Hilti. Hex head for easier installation, Philips head for softer materials such as concrete block. Provide stainless steel washers to hold metal securely. Minimum 5/8" diameter.
 - .2 For exposed conditions, provide stainless steel washer with bonded neoprene gasket.
 - .2 Steel pan head screws with stainless steel washers set into plastic plugs predrilled into concrete or masonry for lighter duty connections. Plastic plug version is required in softer materials such as brick or stucco.
 - .1 #8 x 1" long stainless steel pan head screws with 5/8" diameter stainless steel washers. For exposed conditions, provide washers with bonded neoprene gaskets. Stainless to be 300 Series when exposed otherwise 300 or 400 Series is acceptable.
 - .2 Plastic plugs to be 1-1/8" long Mungo plugs, MUN 6 by UCAN.
 - .3 Into sheet steel:

- .1 Steel pan head screws with fine thread for metal. Can be self tapping or self drilling.
 - .1 #8 x 1/2" (minimum) long stainless steel suitable for metal flashing application. Stainless to be 300 Series when exposed otherwise 300 or 400 Series is acceptable.
 - .2 For exposed conditions use pan head stainless steel screws, with neoprene washer, heads coloured to match flashing.
- .4 Into structural steel (non-exposed): Self drilling screws, corrosion resistant capable of salt spray testing per ASTM B117 providing 2000 hours red rust and 30 cycles Kesternich SO₂.
 - .1 Leland Industries Inc DT2000 Long Life Coated Plating System - #10 x 3/4" complete with washers as required.
 - .2 Provide washers to match the screw coating or stainless. In exposed conditions, provide washers with bonded neoprene gaskets. Minimum 5/8" diameter washers.
- .6 Overflows and Scuppers:
 - .1 16oz. Copper, manufactured by Menzies or pre-approved equivalent. Sizes and profiles as indicated. All copper assemblies to be heat welded if used in an assembly that is torch heated during construction.
 - .2 2mm thick aluminum complete with 75mm (minimum) welded flange and 38mm (minimum) diameter scupper pipe (unless noted otherwise). Scupper pipe is not to be painted.
 - .3 Isolate from dissimilar materials, including concrete.
- .7 Solder: to ASTM B32 Standard Specifications For Metal Solders
- .8 Touch-up paint: as recommended by prefinished material Manufacturer.
- .9 Sealant: Gutter Applications:
 - .1 One part elastomeric sealant made for submerged conditions and bonding to metal.
- .10 Sealant: Metal Fascia Applications (butyl sealant):
 - .1 Non-curing, flexible polyisobutylene sealant.

2.5 EAVES TROUGHS AND DOWNPIPES

- .1 Form eaves troughs, drainpipes, debris deflectors, and hoppers from heavy duty minimum 20 gauge 0.81 mm (0.032") thick prefinished aluminium sheet metal. Downpipes for be minimum 20 gauge 0.81 mm (0.032") thick prefinished aluminum.
- .2 Fasten gutters to fascia support at 305 (12") on centre or less. Fasten downspouts to wall at 1800 (6 foot) on centre or less.
 - .1 Gutters Size and Profile: Size in accordance with Charts 1-1, 1-2, and Table 1-4, and 1-5, SMACNA Architectural Sheet Metal Manual.
 - .1 Minimum size and Profile:

- .1 127 x 95 (5" x 3 3/4") OGEE.
- .2 Gutters to be internally reinforced to resist ice and snow.
- .3 Colour: As selected by Departmental Representative from manufacturer's standard range of colours.
- .2 Rainwater leaders to be a minimum 51 x 76 (2" x 3") rectangle or 64 (2.5") square. Colour to match gutter colour.
- .3 Rainwater leader splash blocks to be minimum 610 long x 305 wide x 76 high (24" x 12" x 3") one-piece precast concrete units with integrally formed trough.
- .4 Balcony Drainpipes Size and Profile: Size in accordance with SMACNA Architectural Sheet Metal Manual. Minimum size to match existing.
- .3 Slope, location of expansion joints, fastening system: design eavestroughs and down pipes to conform with Chapter 1 - "Roof drainage Systems" SMACNA Architectural Sheet Metal Manual.
- .1 Provide all goosenecks, outlets, strainer baskets, connectors to existing storm drainage system, and necessary fastenings.

3 EXECUTION

3.1 FABRICATION

- .1 Fabricate metal flashings and sheet metal work other than aluminium in accordance with applicable CRCA 'FL' series details and SMACNA Architectural Sheet Metal Manual.
- .2 Fabricate aluminium flashings and other sheet aluminium work in accordance with Aluminium Association Aluminium Sheet Metal Work in Building Construction.
- .3 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints. Use maximum length sections possible to minimize joints.
- .4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .7 Form joints between lengths of flashing sections with standing seams whenever possible. S-locks can only be used if approved by the Departmental Representative.
- .8 All exposed or visible metal flashing and trim to be finished in selected colour as indicated including exposed rear faces of end dams, joints, etc. No exposed or visible steel or aluminium flashing work to be unfinished.
- .9 Fabricate custom flashing details and saddles to minimize solder joints.

- .10 Install sealant at flashing joints.
- .11 Metal Flashings including window / door head and sill flashing, through wall flashing, drip edge flashing, base flashing, etc.
 - .1 Form all flashing surfaces as shown on drawings. Minimum slope of 1 in 4 to the exterior to be used where not shown.
 - .2 Form flashings, copings and fascias to profiles indicated.
- .12 Reglets And Cap Flashings
 - .1 Prefinished sheet metal as detailed and in accordance with RCABC Roofing Practices Manual and SMACNA Architectural Sheet Metal Manual details. Provide slotted fixing holes and hot dipped galvanized steel/plastic washer fasteners.
- .13 Scuppers
 - .1 Install scuppers as indicated.
 - .2 Provide necessary fastenings.
 - .3 Isolate metal scuppers from dissimilar materials such as concrete or mortar.
- .14 Metal Vents
 - .1 Form all metal vents to profiles indicated.
 - .2 Fully solder to continuously seal corners and connections.
 - .3 Paint unfinished steel in accordance with Section 09 90 00 – Painting and Coating.
- .15 Custom flashing fabrications
 - .1 Shop fabricate custom flashing as indicated.
 - .2 Form custom flashing fabrications to minimize the number of metal seams and joints. Whenever possible form flashing with standing or breadpan seams.
 - .3 Use clinched joints whenever possible to avoid soldering.
 - .4 Soldered joints must be preapproved by the Departmental Representative.
 - .1 Fully solder joints.
 - .2 Neutralize solder flux with neutralizing bath prior to painting.
 - .5 Paint off site after fabrication to colour specified. Type and method of paint application must be preapproved by the Departmental Representative. Paint must be a baked on finish application after fabrication.

3.2 INSTALLATION

- .1 Install sheet metal work in accordance with RCABC details, SMACNA Architectural Sheet Metal Manual and Aluminium Sheet Metal Work in Building Construction as shown.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal as required. Secure in place and lap underlayment joints 100 mm.

- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock and standing seams forming tight fit over hook strips.
- .5 Lock end joints and caulk with sealant.
- .6 Install surface mounted reglets true and level, and caulk top of reglet with sealant.
- .7 Install head and sill flashings at windows and doors in one continuous piece wherever possible.
- .8 Install flashings lapped "shingle" style with membranes to divert water to the exterior.
- .9 Install all flashings so that all surfaces have a minimum slope of 1:4 to the exterior.
- .10 Cross Cavity Wall Flashings
 - .1 Fit flashings together so that one end of each section is free to move in the joint.
 - .2 Provide end dams when flashings terminate. Caulk end dam to flashing and adjacent material to make watertight.
 - .3 Provide crickets where required to divert moisture to the exterior face of cladding assemblies.
 - .4 Cross cavity flashings typically act as head flashings at windows. Separate flashings required at doors and some window locations.
- .11 Eavestroughs And Downpipes
 - .1 Install eaves troughs and secure to building at 300 mm o.c with eaves trough screws through spacer ferrules. Slope eaves troughs to downpipes as required in Table 1-4 of the SMACNA Architectural Sheet Metal Manual. Provide closure flashing just above eaves trough to hide exposed eave membrane.
 - .2 Provide welded aluminium scupper pipe extensions to the end of the gutters to permit the collected water to spill beyond the building face as detailed.
 - .3 Install precast concrete splash blocks.
- .12 Metal vents
 - .1 Install metal vents as indicated.
- .13 Scuppers
 - .1 Install scuppers as indicated. To secure scupper in oversized cored holes use Hilti HY-150 adhesive.
- .14 Custom flashing fabrications
 - .1 Install custom soldered flashing fabrications as indicated.

END OF SECTION