INTRODUCTORY INFORMATION

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FACILITY CONSTRUCTION SUBGROUP

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DIVISI0N 01: GENERAL REQUIREMENTS

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SECTION 01 1100

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements Summary of Work requirements.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Provisions contained in Division 01 apply to Sections of Divisions 02 through 49 of Specifications. Instructions contained in Specifications are directed to Contractor. Unless specifically provided otherwise, obligations set forth in Contract Documents are obligations of Contractor.

B. Contractor shall furnish total labor, materials, equipment, and services necessary to perform The Work in accordance with Contract Documents.

1.3 WORK BY OWNER

A. Owner will furnish and install some portions of The Work with its own forces. Contractor will be provided with schedule of when these items are to be performed.
   1. General:
      a. Complete work necessary to accommodate work to be performed by Owner before scheduled date for performance of such work. Contractor will be back charged for actual expenses incurred by Owner for failure to timely complete such work.
      b. Store and protect completed work provided by Owner until date of Substantial Completion.
   2. Work furnished and installed by Owner include, but are not limited to, following:
      a. None proposed.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 1200

MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Multiple Contracts.

1.2 SUMMARY OF CONTRACTS

A. Owner may issue separate contracts for operations scheduled to precede and be substantially completed before beginning of The Work under this Contract.
   1. Contractor will be given written notice from such contractors of any revisions to scheduled completion of their work at least 30 days in advance. Owner will reimburse Contractor for expenses incurred by Contractor by failure to be properly notified.

B. Owner has issued or will issue separate contracts for operations scheduled to be completed between Notice to Proceed and Substantial Performance.
   1. None proposed.

C. Owner has issued or will issue separate contracts for operations normally scheduled to follow Substantial Performance.
   1. None proposed.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 1400

WORK RESTRICTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Work Restrictions.

1.2 PROJECT CONDITIONS

A. During construction period, Contractor will have use of premises for construction operations. Contractor will ensure that Contractor, its employees, subcontractors, and their employees comply with following requirements:
   1. Confine operations to areas within Contract limits shown on Drawings. Do not disturb portions of site beyond Contract limits.
   2. Do not allow alcoholic beverages, illegal drugs, or persons under their influence on Project site.
   3. Do not allow use of tobacco in any form on Project Site.
   4. Do not allow pornographic or other indecent materials on site.
   5. Do not allow work on Project site on Sundays except for emergency work.
   6. Refrain from using profanity or being discourteous or uncivil to others on Project Site or while performing The Work.
   7. Wear shirts with sleeves, wear shoes, and refrain from wearing immodest, offensive, or obnoxious clothing, while on Project Site.
   8. Do not allow playing of obnoxious and loud music on Project Site. Do not allow playing of any music within existing facilities.
   9. Do not build fires on Project Site.
   10. Do not allow weapons on Project Site, except those carried by law enforcement officers or other uniformed security personnel who have been retained by Owner or Contractor to provide security services.
   11. Owner will occupy the building during construction.

B. Do not load or permit any part of the structure to be loaded with a weight that will endanger its safety. Questions of structural loading as part of construction means and methods shall be addressed by a licensed structural engineer engaged by Contractor, subject to the review by Architect.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 2900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements to prepare and process Applications for Payments.

1.2 PAYMENT REQUESTS

A. Use Payment Request forms provided by Owner.

B. Each Payment Request will be consistent with previous requests and payments certified by Architect and paid for by Owner.

C. Request Preparation:
   1. Complete every entry on Payment Request form.
   2. Entries will match data on approved schedule of values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
   3. Submit signed Payment Request to Architect with current Construction Schedule.

D. Provide following submittals before or with submittal of Initial Payment Request:
   1. List of Subcontractors.
   2. Initial progress report.
   3. Contractor's Construction Schedule.
   4. Submittal Schedule.

E. Provide Affidavit of Contractor and Consent of Surety with Payment Request following Substantial Performance.

1.3 SCHEDULE OF VALUES

A. Submit schedule of values on Owner’s standard form to Architect 20 days minimum before submission of Initial Payment Request as a necessary condition before payment will be processed. Coordinate preparation of schedule of values with preparation of Contractor's Construction Schedule. Correlate line items in Schedule of Values with other required administrative schedules and forms, including:
   1. Contractor's Construction Schedule.
   2. Payment Request form.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 3100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Project Management and Coordination on Projects.

1.2 PROJECT COORDINATION

A. Project designation for this Project is **LDS 515 5169 2101 0101, Victoria 2, 3 Roof, Victoria British Columbia Stake**.

B. This Project designation will be included on documents generated for Project by Contractor and Subcontractors, or be present on a cover letter accompanying such documents.

1.3 MULTIPLE CONTRACT COORDINATION

A. Contractor shall be responsible for accurately maintaining and reporting schedule of The Work from Notice to Proceed to date of Substantial Performance.

B. Contractor shall be responsible for providing Temporary Facilities And Controls for those who perform work on Project from Notice to Proceed to date of Substantial Performance.

C. Contractor shall be responsible for providing Construction Waste Management And Disposal services for those who perform work on Project from Notice to Proceed to date of Substantial Performance.

D. Contractor shall be responsible for Final Cleaning for entire Project.

1.4 PROJECT MEETINGS AND CONFERENCES

A. Preconstruction Conference:
   1. Attend preconstruction conference and organizational meeting scheduled by Architect at Project site or other convenient location.
   2. Be prepared to discuss items of significance that could affect progress, including such topics as:
      a. Construction schedule.
      b. Critical Work sequencing.
      c. Current problems.
      d. Designation of responsible personnel.
      e. Distribution of Contract Documents.
      f. Equipment deliveries and priorities.
      g. General schedule of inspections by Architect and its consultants.
      h. General inspection of tests.
      i. Office, work, and storage areas.
      j. Preparation of record documents and O & M manuals.
      k. Procedures for processing interpretations and Modifications.
      l. Procedures for processing Payment Requests.
      m. Project cleanup.
      n. Security.
      o. Status of permits.

p. Submittal of Product Data, Shop Drawings, Samples, Quality Assurance / Control submittals.
q. Use of the premises.
r. Work restrictions.
s. Working hours.

3. Architect will record minutes of meetings and distribute copies to Owner and Contractor within three (3) working days.

B. Progress Meetings:
1. Attend progress meetings at Project site at regularly scheduled intervals determined by Architect, at least once a month.
2. Progress meetings will be open to Owner, Architect, Subcontractors, and anyone invited by Owner, Architect, and Contractor.
3. Be prepared to discuss items of significance that could affect progress, including following:
a. Progress since last meeting.
b. Whether Contractor is on schedule.
c. Activities required to complete Project within Contract Time.
d. Labor and materials provided under separate contracts.
e. Off-site fabrication problems.
f. Access.
g. Site use.
h. Temporary facilities and services.
i. Hours of work.
j. Hazards and risks.
k. Project cleanup.
l. Quality and Work standards.
m. Status of pending modifications.
n. Documentation of information for Payment Requests.
o. Maintenance of Project records.
4. Architect will prepare minutes of progress meetings and distribute copies of minutes to Owner and Contractor within three (3) working days.

C. Pre-Installation Conferences:
1. Attend pre-installation conferences specified in Contract Document.
a. If possible, schedule these conferences on same day as regularly scheduled Progress Meetings. If this is not possible, coordinate scheduling with Architect.
b. Request input from attendees in preparing agenda.
2. Be prepared to discuss following items:
a. Requirements of Contract Documents.
b. Completed work necessary for installation of items or systems.
c. Conditions not in compliance with installation requirements.
d. Installation and inspection schedule.
e. Coordination between trades.
f. Space and access limitations.
g. Testing.
3. Architect will prepare meeting minutes and distribute minutes to Owner and Contractor within three (3) working days.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 3200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for documenting the progress of construction during performance of the Work.

1.2 SCHEDULING OF WORK

A. Bar Chart Schedule:
   1. Submit horizontal bar chart schedule before Preconstruction Conference. Provide separate time bar for each construction activity listed on Owner's payment request form. Within each time bar, show estimated completion percentage. Provide continuous vertical line to identify first working day of each week. Show each activity in chronological sequence. Show graphically sequences necessary for completion of related portions of The Work. As The Work progresses, place contrasting mark in each bar to indicate actual completion.
   2. Provide copies of schedule for Architect and Owner and post copy in field office.
   3. Revise schedule monthly. Send copy of revised schedule to Owner and Architect and post copy in field office.
   4. Project Management Software Programs:
      a. Any software project management program capable of Bar Chart Scheduling for projects of equal size and complexity is approved by Contractor and approved by Owner's Project Manager.

B. Daily Construction Reports:
   1. Prepare daily reports of operations at Project including at least following information:
      a. List of Subcontractors at site.
      b. Approximate count of personnel at site by trade.
      c. High and low temperatures, general weather conditions.
      d. Major items of equipment on site.
      e. Materials, equipment, or Owner-furnished items arriving at or leaving site.
      f. Accidents and unusual events.
      g. Site or structure damage by water, frost, wind, or other causes.
      h. Meetings, conferences, and significant decisions.
      i. Visitors to the job including meeting attendees.
      j. Stoppages, delays, shortages, losses.
      k. Any tests made and their result if known.
      l. Meter readings and similar recordings.
      m. Emergency procedures.
      n. Orders and requests of governing authorities.
      o. Modifications received, carried out.
      p. Services connected, disconnected.
      q. Equipment or system tests and start-ups.
      r. Brief summary of work accomplished that day.
      s. Signature of person preparing report.
   2. Submit daily reports to Architect at least weekly.
   3. Maintain copies of daily reports at field office.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Submittal Procedures.

B. Related Requirements:
   1. Section 01 7800: 'Closeout Submittals' for administrative and procedural requirements for closeout submittals.

1.2 SUBMITTAL SCHEDULE

A. Furnish submittal schedule within 20 days after receipt of Notice to Proceed, listing items specified to be furnished for review to Architect including product data, shop drawings, samples, and Informational submittals.
   1. Coordinate submittal schedule with Contractor's construction schedule.
   2. Enclose the following information for each item:
      a. Scheduled date for first submittal.
      b. Related Section number.
      c. Submittal category.
      d. Name of Subcontractor.
      e. Description of part of the Work covered.
      f. Scheduled date for resubmittal.
      g. Scheduled date for Architect's final release or approval.

B. Print and distribute copies to Architect and Owner and post copy in field office. When revisions are made, distribute to same parties and post in same location.

C. Revise schedule monthly. Send copy of revised schedule to Owner and Architect and post copy in field office.

1.3 SUBMITTAL PROCEDURES

A. Coordination:
   1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently before performance of related construction activities to avoid delay.
      a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
      b. Coordinate transmittal of different types of submittals required for related elements of The Work so processing will not be delayed by need to review submittals concurrently for coordination. Architect reserves right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
   2. Processing Time:
      a. Allow sufficient review time so installation will not be delayed by time required to process submittals, including time for resubmittals.
         1) Allow 21 days for initial review. Allow additional time if processing must be delayed allowing coordination with subsequent submittals. Architect will promptly advise Contractor when submittal being processed must be delayed for coordination.
         2) If an intermediate submittal is necessary, process same as initial submittal.

3) Allow 10 days for reprocessing each submittal.
4) No extension of Contract Time will be authorized because of failure to transmit submittals to Architect in sufficient time before work is to be performed to allow processing.

3. Identification:
   a. Place permanent label or title block on each submittal for identification. Include name of entity that prepared each submittal on label or title block.
      1) Provide space approximately 4 by 5 inches on label or beside title block on Shop Drawings to record Contractor's review and approval markings and action taken.
      2) Include following information on label for processing and recording action taken:
         a) Project name.
         b) Date.
         c) Name and address of Architect.
         d) Name and address of Contractor.
         e) Name and address of Subcontractor.
         f) Name and address of supplier.
         g) Name of manufacturer.
         h) Number and title of appropriate Specification Section.
         i) Drawing number and detail references, as appropriate.
4. Transmittal:
   a. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using transmittal letter. On transmittal, record relevant information and requests for data. Include Contractor's certification that information complies with Contract Document requirements, or, on form or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.
   b. Submittals received from sources other than Contractor or not marked with Contractor's approval will be returned without action.

1.4 ACTION SUBMITTALS

A. Product Data:
1. Submit Product Data, as required by individual Sections of Specifications.
2. Mark each copy of each set of submittals to show choices and options used on Project. Where printed Product Data includes information on products that are not required for Project, mark copies to indicate information relating to Project.
3. Certify that proposed product complies with requirements of Contract Documents. List any deviations from those requirements on form or separate sheet.
4. Submit electronic files PDF: Architect will return a PDF copy marked with action taken and with corrections or modifications required.

B. Shop Drawings:
1. Submit newly prepared graphic data to accurate scale. Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 36 by 48 inches (915 by 1 200 mm). Highlight, encircle, or otherwise show deviations from Contract Documents. Include following information as a minimum:
   a. Dimensions.
   b. Identification of products and materials included.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
2. Do not reproduce Contract Documents or copy standard information as basis of Shop Drawings. Standard printed information prepared without specific reference to Project is not acceptable as Shop Drawings.
3. Review and designate (stamp) approval of shop drawings. Submit shop drawings required by Contract Documents in PDF format. Shop drawings not required by Contract Documents, but requested by Contractor or supplied by Subcontractor, need not be submitted to Architect for review.

C. Samples:

1. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
    a. Mount, display, or package Samples to ease review of qualities specified. Prepare Samples to match samples provided by Architect, if applicable. Include following:
        1) Generic description of Sample.
        2) Sample source.
        3) Product name or name of manufacturer.
        4) Compliance with recognized standards.
        5) Availability and delivery time.
2. Submit Samples for review of kind, color, pattern, and texture, for final check of these characteristics with other elements, and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
    a. Where variations in color, pattern, texture or other characteristics are inherent in material or product represented, submit set of three samples minimum that show approximate limits of variations.
    b. Refer to other specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
    c. Refer to other Sections for Samples to be returned to Contractor for incorporation into The Work. Such Samples shall be undamaged at time of use. On transmittal, indicate special requests regarding disposition of Sample submittals.
3. Where Samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit full set of choices for material or product. Preliminary submittals will be reviewed and returned with Architect's mark indicating selection and other action.
4. Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three sets. One will be returned marked with action taken.
5. Samples, as accepted and returned by Architect, will be used for quality comparisons throughout course of construction.
    a. Unless noncompliance with Contract Documents is observed, submittal may serve as final submittal.
    b. Sample sets may be used to obtain final acceptance of construction associated with each set.

1.5 INFORMATIONAL SUBMITTALS

A. Informational submittals are design data, test reports, certificates, manufacturer's instructions, manufacturer's field reports, and other documentary data affirming quality of products and installations. Submit electronic files: PDF. Architect will return a PDF copy marked with action taken and with corrections or modifications required.
    1. Certificates: Describe certificates intended to document affirmations by Contractor or others that the work is in accordance with the Contract Documents, but do not repeat provisions of Parts 2 or 3.
    2. Delegated Design Submittals / Design Data: Describe submittals intended to demonstrate design work prepared by Contractor’s licensed professionals.
    3. Test And Evaluation Reports: Describe submittal of test reports or evaluation service reports intended to document required tests.
    4. Manufacturer Instructions: Describe submittals intended to document manufacturer instructions.
    5. Source Quality Control Submittals: Describe submittal of source quality control documentation.
    6. Field Quality Control Submittals: Describe submittal of field quality control documentation.
    7. Manufacturer Reports: Describe submittal of Manufacturer reports as documentation of manufacturer activities.
    8. Special Procedure Submittals: Describe submittals intended to document special procedures. An example would be construction staging or phasing for remodeling an existing facility while keeping it in operation. While the Contractor would normally be responsible for managing this, submittal of his plan as documentation could be specified.

9. Qualification Statements: Describe submittals intended to document qualifications of entities employed by Contractor.

1.6 CLOSEOUT SUBMITTALS

A. This title groups submittals that occur during project closeout. Coordinate with section 01 7800 Closeout Submittals.
   1. As Built Record Drawings as defined in the Agreement.
   2. Project Manual: Complete Project Manual including Addenda and Modifications as defined in General Conditions.
   3. Maintenance Contracts: Describe submittal of the maintenance contract specific to the Section.
   4. Operations & Maintenance Data: Describe submittal of operation and maintenance data necessary for products of the Section.
   5. Warranty Documentation: Describe submittal of final executed warranty document specific to the Section.
   6. Record Documentation: Describe submittal of record documentation specific to the Section.
   7. Software: Describe submittal system software and programming software specific to the Section.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. This title groups maintenance material required submittals specific to the Section. Items may be provided at completion of Work or submitted with section 01 7800 Closeout Submittals:
   1. Spare Parts: Describe spare parts necessary for Owner's use in facility operation and maintenance. 'Parts' are generally understood to be items such as filters, motor drive belts, lamps, and other similar manufactured items that require only simple replacement.
   2. Extra Stock Materials: Describe extra stock materials to be provided for Owner's use in facility operation and maintenance. Extra stock materials are generally understood to be items such as ceiling tiles, flooring, paint etc.
   3. Tools:
      a. Describe tools to be provided for Owner's use in facility operation and maintenance. Tools are generally understood to be wrenches, gauges, circuit setters, etc, required for proper operation or maintenance of a system.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 3500

SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Special Procedures.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Acceleration of Work:
   1. Complete The Work in accordance with Construction Schedule. If Contractor falls behind schedule, take such actions as are necessary, at no additional expense to Owner, to bring progress of The Work back in accordance with schedule.
   2. Owner may request proposal for completion of The Work at date earlier than expiration of Contract Time:
      a. Promptly provide requested proposal showing cost of such acceleration of The Work. Consult with Owner and Architect regarding possible options to decrease cost of such acceleration.
      b. If Owner determines to order acceleration of The Work, change in Contract Sum and Contract Time resulting from acceleration will be included in a Change Order.

1.3 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Meet regulations of current applicable OHAS, WCB, and Worksafe BC.
   2. Owner's Safety Requirements:
      a. Personal Protection:
         1) Contractor shall ensure:
            a) Positive means of fall protection, such as guardrails system, safety net system, personal fall arrest system, etc, is provided to employees whenever exposed to a fall 6 feet (1.80 m) or more above a lower level.
            b) Personnel working on Project shall wear hard hats and safety glasses as required by regulation and hazard.
            c) Personnel working on Project shall wear long or short sleeve shirts, long pants, and hard-toed boots or other sturdy shoes appropriate to type and phase of work being performed.
      b. Contractor Tools And Equipment:
         1) Contractor shall ensure:
            a) Tools and equipment are in good working condition, well maintained, and have necessary guards in place.
            b) Ground Fault Circuit Interrupters (GFCI) is utilized on power cords and tools.
            c) Scaffolding, fall protection, and man lifts are in good working condition, erected and maintained as required by governmental regulations.
            d) Ladders are in good condition, well maintained, used as specified by Manufacturer, and secured as required.
      c. Miscellaneous:
         1) Contractor shall ensure:
            a) Protection is provided on protruding rebar and other similar objects.
            b) General Contractor Superintendent has completed the OHAS construction outreach training course or equivalent.
            c) Implementation and administration of safety program on Project.

d) Material Safety Data Sheets (MSDS) are provided for substances or materials for which an MSDS is required by governmental regulations before bringing on site.
e) Consistent safety training is provided to employees on Project.
f) Implement and coordinate Lockout / Tagout procedures with Owner's Representative as required.

2) Report accidents involving injury to employees on Project that require off-site medical treatment to Owner's designated representative.

d. Hot Work Permit:
1) Permit shall document that fire prevention and protection requirements in 29 CFR 1926.352, 'Fire Prevention' have been implemented prior to beginning hot work operations.
2) Required for doing hot work involving open flames or producing heat or sparks such as:
a) Brazing.
b) Cutting.
c) Grinding.
d) Soldering.
e) Thawing pipe.
f) Welding.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Related Requirements:
1. Section 01 3100: 'Project Management and Coordination' for Pre-Installation Conferences for testing and inspection.
2. Section 01 3200: 'Construction Progress Documentation' for developing a schedule of required tests and inspections.
3. Section 01 3300: 'Submittal Procedures'.
4. Section 01 4301: 'Quality Assurance – Qualifications' establishes minimum qualification levels required.
5. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.
6. Section 01 7300: 'Executions' for cutting and patching for repair and restoration of construction disturbed by testing and inspecting activities.
7. Divisions 01 thru 49 establish responsibility for providing specific testing and inspections.

1.3 REFERENCES

A. Definitions:
1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
2. Approved: To authorize, endorse, validate, confirm, or agree to.
3. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with requirements indicated; and having complied with requirements of authorities having jurisdiction.
4. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a construction operation, including installation, erection, application, and similar operations.
    a. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of corresponding generic name.
5. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish standard by which the Work will be judged.
6. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant

construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
7. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
8. Product Testing: Tests and inspections that are performed by testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
9. Service Provider: Agency or firm qualified to perform required tests and inspections.
10. Source Quality Control Testing: Tests and inspections that are performed at source, i.e., plant, mill, factory, or shop.
11. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
12. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
13. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.

B. Reference Standards:
1. International Code Council (IBC) (2015 or most recent edition adopted by AHJ):
   a. IBC Chapter 17, 'Structural Tests and Special Inspections'.
2. 2018 British Columbia Building Code.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Conflicting Requirements:
1. General:
   a. If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement.
   b. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
   c. Canadian and Provincial codes will govern.
2. Minimum Quantity or Quality Levels:
   a. Quantity or quality level shown or specified shall be minimum provided or performed.
   b. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits.
   c. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for context of requirements.
   d. Refer uncertainties to Architect for decision before proceeding.

B. Coordination:
1. Coordinate sequence of activities to accommodate required quality assurance and quality control services with minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

C. Scheduling:
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.5 QUALITY ASSURANCE

A. Testing and inspecting services are used to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
1. Specific quality assurance and quality control requirements for individual construction activities are specified in Sections that specify those activities and Section 01 4523. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality control procedures that facilitate compliance with Contract Document requirements.
3. Requirements for Contractor to provide quality assurance and quality control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

B. Quality Assurance Services:
1. Activities, actions, and procedures performed before and during execution of the Work to verify compliance and guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
2. Owner or Owner’s designated representative(s) will perform quality assurance to verify compliance with Contract Documents.

C. Activities performed by Owner’s Quality Assurance Testing Agency include, but are not limited to following:
1. Individual Sections in Division 01 through Division 49:
   a. Pre-Installation Conference agenda review items for:
      1) Schedule requirements.
      2) Testing and inspection requirements:
      3) Requirements and frequency of testing and inspections.
      4) Mock-up or sample requirements.
      5) Submittals requirements.
   b. Quality Assurance personal qualifications.
      1) Qualification documentation including certificates if required.
   c. Non-Conforming Work:
      1) Prepare non-compliance log to track non-compliant testing or inspections.
2. Weekly Activities:
   a. Summarize and track any non-compliance issues.

D. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with following requirements, using materials indicated for completed Work:
1. Coordinate with individual section in Division 01 through Division 49 if there are any additional requirements or modification to these requirements:
   a. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
   b. Notify Architect seven days in advance of dates and times when mockups will be constructed.
   c. Demonstrate proposed range of aesthetic effects and workmanship.
   d. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
      1) Allow seven days for initial review and each re-review of each mockup.
   e. Maintain mockups during construction in undisturbed condition as standard for judging completed Work.
      1) Demolish and remove mockups when directed, unless otherwise indicated.

1.6 QUALITY CONTROL

A. Quality Control Services:
1. **Quality Control will be sole responsibility of Contractor.**
   a. Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements performed by Contractor:
      1) They do not include inspections, tests or related actions performed by Architect, Owner, governing authorities or independent agencies hired by Owner or Architect.
      2) Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
   b. Where services are indicated as Contractor's responsibility, engage a qualified Testing Agency to perform these quality control services.
      1) Contractor shall not employ same testing entity engaged by Owner, without Owner’s written approval.

B. Manufacturer's Field Services: Where indicated, engage factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 3300: 'Submittal Procedures'.

C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify Testing Agency sufficiently in advance of operations to permit assignment of personnel. Provide following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist Testing Agency in obtaining samples.
   4. Delivery of samples to testing agencies.
   5. Security and protection for samples and for testing and inspecting equipment at Project site.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections:
   1. Civil And Structural Testing:
      a. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services'. Quality Control is sole responsibility of Contractor:
         1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
            a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
         2) Contractor bears full responsible for compliance with all contract requirements and quality control on project.
      b. Weekly Activities:
         1) Ensure that non-compliance log is current.
         2) Provide summary reports of performed Work.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   2. Comply with Contract Document requirements for Section 01 7300 'Execution' for cutting and patching.

B. Protect construction exposed by or for Quality Assurance and Quality Control activities.

C. Repair and protection are Contractor's responsibility, regardless of assignment of responsibility for Quality Assurance and Quality Control Services.

END OF SECTION

SECTION 01 4200

REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Reference standards, definitions, specification format, and industry standards.

1.2 REFERENCES

A. Definitions:
   1. Approved: The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
   2. Directed: The term "directed" is a command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," and "permitted" have the same meaning as "directed."
   3. Experienced: The term "experienced," when used with an entity, means having successfully completed a minimum often previous projects similar in size and scope to this Project; being familiar with the special requirements indicated, and having complied with requirements of authority having jurisdiction.
   4. Furnish: The term "furnish" means supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
   5. General: Basic Contract definitions are included in the Conditions of the Contract.
   6. Indicated: The term "indicated" refers to requirements expressed by graphic representations, or in written form on Drawings, in Specifications, and in other Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
   7. Install: The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
   8. Installer: An "Installer" is the Contractor, or another entity engaged by the Contractor, as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   9. Project Site: The term "Project site" means the space available for performing construction activities. The extent of the Project site is shown on the Drawings and mayor may not be identical with the description of the land on which the Project is to be built.
   10. Provide: The term "provide" means to furnish and install, complete and ready for the intended use.
   11. Regulations: The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
   12. Submitted: The terms "submitted," "reported," "satisfactory" and similar words and phrases means submitted to Architect, reported to Architect and similar phrases.
   13. Testing Agencies: A "testing agency" is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, or to report on and, if required, to interpret results of those inspections or tests.
   14. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

B. References Standards:

1. Specification Format: Specifications will follow MasterFormat™ 2004 for organizing numbers and titles. (The Construction Specifications Institute, Project Resource Manual/CSI Manual of Practice, 5th *Edition*. New York, McGraw-Hill, 2005).
    a. Specification Identifications:
        1) The Specifications use section numbers and titles to help cross referencing in the Contract Documents.
        2) Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
    b. Specification Language:
        1) Specifications should be prepared, with concern and respect for their legal status. Specifications should be Clear, Concise, Correct and Complete.
        2) Streamlining: Streamlining is used to list products, materials, reference standards, and other itemized specifications. This technique places the subject first and provides keywords for quick reference
    c. Sentence Structure:
        1) Specifications to be written in the “Imperative Mood”.
            a) The verb that clearly defines the action becomes the first word in the sentence.
            b) The imperative sentence is concise and readily understandable.
        2) Streamlining is used to list products, materials, reference standards, and other itemized specifications. This technique places the subject first and provides keywords for quick reference.
    d. Abbreviated Language:
        1) Abbreviations should be used only on drawings and schedules where space is limited.
        2) Abbreviations with multiple meanings should be avoided, unless used in different disciplines where their meaning is clear from the context in which they are used.
        3) Abbreviations should be limited to five or fewer letters
            a) The verb that clearly defines the action becomes the first word in the sentence.
    e. Symbols:
        1) Caution should apply to symbols substituted for words or terms.
    f. Numbers:
        1) The use of Arabic numerals rather that words for numbers is recommended.

C. Industry Standards:
    1. Except where Contract Documents specify otherwise, construction industry standards will apply and are made a part of Contract Documents by reference.
    2. Where compliance with two or more standards is specified and standards apparently establish different or conflicting requirements for minimum quantities or quality levels, refer to Architect for decision before proceeding. Quantity or quality level shown or specified will be minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for context of requirements. Refer uncertainties to Architect for decision before proceeding.
    3. Each entity engaged in construction on Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with Contract Documents. Where copies of standards are needed for performance of a required construction activity, Contractor will obtain copies directly from publication source.
    4. Trade Association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean association names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

D. Federal Government Agencies:
    1. Names and titles of federal government standard or specification producing agencies are often abbreviated. Following acronyms or abbreviations referenced in Contract Documents represent names of standard or specification producing agencies of federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

E. Governing Regulations / Authorities:

1. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.
2. Obtain copies of regulations required to be retained at Project Site, available for reference by parties who have a reasonable need for such reference.

F. Governing Codes:
1. Applicable Canadian Codes and Regulations.
2. Applicable Provincial Codes and Regulations.
3. 2018 British Columbia Building Code.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 4301

QUALITY ASSURANCE - QUALIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:
   1. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Requirements:
   1. Section 01 4000: 'Quality Requirements' includes administrative and procedural requirements for quality assurance and quality control.
   2. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.

1.2 REFERENCES

A. Definitions:
   1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
   2. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
   3. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
   4. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.

B. Reference Standards:
   1. ASTM International:
      a. ASTM E329-18, 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.'

1.3 QUALIFICATIONS

A. Qualifications: Qualifications paragraphs in this Article establish minimum qualification levels required; individual Specification Sections specify additional requirements:
   1. Manufacturers / Distributors / Fabricator / Suppliers / Installers Qualifications: Firm experienced in producing products similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units.
      a. Owner established Relationships:
         1) Where heading 'Category One, Two, VMR, or Three Approved' *Manufacturers / Suppliers / Distributors / Installers*' is used to identify list Owner established Relationships, Owner has established relationships that extend beyond requirements of this Project.
         2) No other *Manufacturers / Suppliers / Distributors / Installers* will be acceptable.
         3) Follow specified procedures to preserve relationships between Owner and specified *Manufacturers / Suppliers / Distributors / Installers* and advantages that accrue to Owner from those relationships.
         4) Following areas of the Work have restrictions on sub-bids by Contractor:

a) Asphalt Shingles, Section 07 3113: Category Three Approved, no other Manufacturer / Installers accepted.
b) EPDM Roofing, Section 07 5323: Category Three Approved, no other Manufacturer / Installers accepted.

b. Approved:
   1) Where heading '*Approved Suppliers / Distributors / Installers / Applicators / Fabricators*' is used to identify list of specified suppliers / distributors / installers / applicators / fabricators, use only listed suppliers / installers / fabricators.
   2) No substitutions will be allowed.
c. Acceptable Suppliers / Installers:
   1) Where heading '*Acceptable Suppliers / Installers / Fabricators*' is used, qualifications as specified in Quality Assurance in Part 1 of individual sections will be used to determine requirements of those that will be acceptable to be used on Project. Lists for acceptable installers can include additional installers that may be approved before bidding or by addendum.

2. Factory-Authorized Service Representative Qualifications:
   a. Authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
3. Installer Qualifications:
   a. Firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
4. Manufacturer Qualifications:
   a. Firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
5. Manufacturer's Field Services Qualifications:
   a. Experienced authorized representative of manufacturer to inspect field-assembled components and equipment installation, including service connections.
6. Professional Engineer Qualifications:
   a. Professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of kind indicated. Engineering services are defined as those performed for installations of system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
7. Specialists:
   a. Certain sections of Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations.
8. Testing Agency Qualifications:
   a. Independent Testing Agency with experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
      1) Testing Laboratory:
         a) AASHTO Materials Reference Laboratory (AMRL) Accreditation Program.
         b) Nationally Recognized Testing Laboratory (NRTL): Nationally recognized testing laboratory according to 29 CFR 1910.7.
         c) National Voluntary Laboratory (NVLAP): Testing Agency accredited according to National Institute of Standards and Technology (NIST) Technology Administration, U. S. Department of Commerce Accreditation Program.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 4523

TESTING AND INSPECTING SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section

1.2 SUMMARY

A. This Section includes testing, inspections, special testing, special inspections, and testing laboratory services for materials, products, and construction methods as specified hereafter for the Work.

B. Specified tests, inspections, and related actions do not limit Contractor's quality control procedures to fully comply with Contract Document requirements in all regards.

C. Costs: Costs of initial services for testing and inspection personnel will be paid by Owner unless otherwise noted.
   1. If initial tests indicate non-compliance with contract document requirements, any subsequent testing will be performed by same personnel and paid for by Contractor.

D. Related Requirements:
   1. Section 01 4000: 'Quality Requirements' includes administrative and procedural requirements for quality assurance and quality control.
   2. Section 01 4301: 'Quality Assurance – Qualifications' establishes minimum qualification levels required.
   3. Division 01 through Division 49 establish responsibility for providing specific testing and inspections and Field Tests and Inspections.

1.3 REFERENCES

A. Association Publications:
   1. Council of American Structural Engineers. CASE Form 101: *Statement of Special Inspections*. Washington, DC: CASE, 2001. (c/o American Council of Engineering Companies, 1015 15th St., NW, Washington, DC 20005; 202-347-7474; www.acec.org).
   2. International Code Council (IBC):
      a. IBC Chapter 17, 'Structural Tests and Special Inspections'.
   3. 2018 British Columbia Building Code.

B. Definitions:
   1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
   2. Approved: To authorize, endorse, validate, confirm, or agree to.
   3. Field Quality Control: Testing, Inspections, Special Testing and Special Inspections to assure compliance to Contract Documents.
   4. Inspection/Special Inspection:
      a. Inspection: Not required by code provisions but may be required by Contract Documents.
      b. Special Inspection: Inspection required of materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance

with approved construction documents and reference standards (required by code provisions and by Contract Documents).

5. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation. They are not samples. Approved mockups establish standard by which the Work will be judged.
6. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
7. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
8. Quality Assurance: Testing, Inspections, Special Testing and Special Inspections provided for by Owner.
9. Quality Control: Testing, Inspections, Special Testing and Special Inspections provided for by Contractor.
10. Test/Special Test: Field or laboratory tests to determine characteristics and quality of building materials and workmanship:
    a. Test: Not required by code provisions but may be required by Contract Documents.
    b. Special Test: Required by code provisions and by Contract Documents.
11. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
12. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
13. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.

C. Reference Standards:
1. ASTM International:
    a. ASTM C1021-08(2014), ‘Standard Practice for Laboratories Engaged in Testing of Building Sealants’.
    b. ASTM E329-18: ‘Standard Specification for Agencies Engaged in Construction Inspection and/or Testing’.
    c. ASTM E543-15, ‘Standard Specification for Agencies Performing Nondestructive Testing’.
    d. ASTM E1212-17, ‘Standard Practice for Quality Management Systems for Nondestructive Testing Agencies'.
2. International Code Council Code (IBC) (2018 or most recent edition adopted by AHJ):
    a. IBC Chapter 17, ‘Special Inspections And Tests’.
3. 2018 British Columbia Building Code.

1.4 SUBMITTALS

A. Informational Submittals:
1. General: Additional submittal requirements are specified in Individual Sections in Division 01 through Division 50.
2. Certificates:
    a. Testing Agency will submit certified written report of each inspection, test, or similar service.
3. Tests and Evaluation Reports:
    a. Testing Agency or Agencies will prepare logs, test reports, and certificates applicable to specific tests and inspections and deliver copies (or electronic record) distributed as follows:
        1) 1 copy to Owner’s Representative.
        2) 1 copy to Architect.
        3) 1 copy to General Contractor.
        4) 1 copy to Authorities Having Jurisdiction (if required).
    b. Other tests, certificates, and similar documents will be obtained by Contractor and delivered to Owner’s Representative and Architect in such time as not to delay progress of the Work or final payment therefore.
    c. Submittal Format:

1) Schedule of Tests and Inspections: Prepare in tabular form and include following:
   a) Specification Section number and title.
   b) Description of test and inspection.
   c) Identification of applicable standards.
   d) Identification of test and inspection methods.
   e) Number of tests and inspections required.
   f) Time schedule or time span for tests and inspections.
   g) Entity responsible for performing tests and inspections.
   h) Requirements for obtaining samples.
2) Certified written reports of each inspection, test, or similar service will include, but not be limited:
   a) Date of issue.
   b) Project title and number.
   c) Name, address, and telephone number of Testing Agency.
   d) Dates and locations of samples and tests or inspections.
   e) Names of individuals making tests and inspections.
   f) Description of the Work and test and inspection method.
   g) Identification of product and Specification Section.
   h) Complete test or inspection data.
   i) Test and inspection results and an interpretation of test results.
   j) Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   k) Comments or professional opinion on whether tested or inspected Work complies with Contract Document requirements.
   l) Name and signature of laboratory inspector.
   m) Recommendations on retesting and re-inspecting.

4. Source Quality Control Submittals:
   a. Testing Agency will submit following prior to commencing the Work:
      1) Qualifications of Testing Agency management and personnel designated to project.
      2) Testing Agency 'Written Practice for Quality Assurance'.
      3) Qualification records for Inspector and non-destructive testing technicians designated for project.
      4) Testing Agency non-destructive testing procedures, equipment calibration records, and personnel training records.
      5) Testing Agency Quality Control Plan for monitoring and control of testing operations.

1.5 QUALITY ASSURANCE

A. **Owner or Owner's designated representative(s) will perform quality assurance.** Owner's quality assurance procedures may include observations, inspections, testing, verification, monitoring and any other procedures deemed necessary by Owner to verify compliance with Contract Documents.

B. Owner will employ independent Testing Agencies to perform certain specified testing, as Owner deems necessary.

C. Certification:
   1. Product producers and associations, which have instituted approved systems of quality control and which have been approved by document approval agencies, are not required to have further testing.

D. Written Practice for Quality Assurance:
   1. Testing Agency will maintain written practice for selection and administration of inspection personnel, describing training, experience, and examination requirements for qualification and certification of inspection personnel.
   2. Written practice will describe testing agency procedures for determining acceptability of structure in accordance with applicable codes, standards, and specifications.
   3. Written practice will describe Testing Agency inspection procedures, including general inspection, material controls, visual welding inspection, and bolting inspection.

1.6 QUALITY CONTROL

A. **Quality Control will be sole responsibility of Contractor.** Contractor will be responsible for testing and inspections, coordination, start-up, operational checkout, and commissioning of all items of the Work included in Project. All costs for these services will be included in Contractor's cost of the Work.

B. Contractor will assign one (1) employee to be responsible for Quality Control. This individual may have other responsibilities and may be Contractor's Project superintendent or Contractor's Project Manager.

C. Notify results of all Testing and Inspection performed by Contractor's independent Testing Agencies to Architect and Owner's Representative within twenty four (24) hours of test or inspection having been performed.
   1. Testing and Inspection Reports will be distributed as follows:
      a. 1 copy to Owner's Representative.
      b. 1 copy to Architect.
      c. 1 copy to Authorities Having Jurisdiction (if required).

D. Contractor's Responsibility:
   1. Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents.
   2. Tests and inspections that are not explicitly assigned to Owner are responsibility of Contractor.
   3. Cooperate with Testing Agency(s) performing required inspections, tests, and similar services and provide reasonable auxiliary services as requested. Notify Testing Agency before operations to allow assignment of personnel. Auxiliary services required include but are not limited to:
      a. Providing access to the Work and furnishing incidental labor, equipment, and facilities deemed necessary by Testing Agency to facilitate inspections and tests at no additional cost to Owner.
      b. Taking adequate quantities of representative samples of materials that require testing or helping Testing Agency in taking samples.
   4. Contractor will integrate Owner's independent Testing Agency services within Baseline Project Schedule and with other Project activities.
   5. For any requested inspection, Contractor will complete prior inspections to ensure that items are ready for inspection.
   6. All Work is subject to testing and inspection and verification of correct operation prior to 100% payment to Contractor of line item(s) pertaining to that aspect of the Work.
   7. Comply:
      a. Upon completion of Testing Agency's inspection, testing, sample-taking, and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
      b. Comply with Contract Documents in making such repairs.
   8. Data: Furnish records, drawings, certificates, and similar data as may be required by testing and inspection personnel to assure compliance with Contract Documents.
   9. Defective Work (Non-Conforming Work): Non-conforming Work as covered in General Conditions applies, but is not limited to following requirements:
      a. Where results of inspections, tests, or similar services show that the Work does not comply with Contract Document requirements, correct deficiencies in the Work promptly to avoid Work delays.
      b. Where testing personnel take cores or cut-outs to verify compliance, repair prior to acceptance.
      c. Contractor responsible for any and all costs incurred resulting from inspection that was scheduled prematurely or retesting due to failed tests.
      d. Remove and replace any Work found defective or not complying with contract document requirements at no additional cost to Owner.
      e. Should test return unacceptable results, Contractor will bear all costs of retesting and re-inspection as well as cost of all material consumed by testing, and replacement of unsatisfactory material and/or workmanship.
   10. Protection:

a. Protect construction exposed by or for quality assurance and quality control service activities, and protect repaired construction.

11. Scheduling: Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities:
    a. Schedule testing and inspections in advance so as not to delay the Work and to eliminate any need to uncover Work for testing or inspection.
    b. Notify Testing Agency and Architect as noted in Sections in Division 01 through Division 50 prior to any time required for such services.
    c. Incorporate adequate time for performance of all inspections and correction of noted deficiencies.
    d. Schedule sequence of activities to accommodate required services with minimum of delay.
    e. Schedule sequence of activities to avoid necessity of removing and replacing construction to accommodate testing and inspections
12. Test and Inspection Log:
    a. Provide system of tracking all field reports, describing items noted, and resolution of each item. Prepare record of tests and inspections. Include following:
        1) Date test or inspection was conducted.
        2) Description of the Work tested or inspected.
        3) Date test or inspection results were transmitted to Architect.
        4) Identification of Testing Agency or inspector conducting test or inspection.
    b. Maintain log at Project site:
        1) Post changes and modifications as they occur.
        2) Provide access to test and inspection log for Architect's reference during normal working hours.

1.7 TESTING AND INSPECTIONS - GENERAL

A. Testing specifically identified to be conducted by Owner, will be performed by an independent entity and will be arranged and paid for by Owner.

B. Individual Sections in Division 01 through Division 49 indicate if Owner will provide testing and inspection of the Work of that Section.

C. Tests include but not limited to those described in detail in 'Field Quality Control' in Part 3 of Individual Sections in Divisions 01 through Division 49.

D. Taking Specimens:
1. Except as may be specifically otherwise approved by Architect, only testing laboratory shall secure, handle, transport, or store any samples and specimens for testing.

E. Scheduling Testing Agency:
1. Contractor will coordinate the Work and facilitate timeliness of such testing and inspecting services so as not to delay the Work.
2. Contractor will notify Testing Agency and Architect to schedule tests and / or inspections.

1.8 TESTING AGENCY SERVICES AND RESPONSIBILITIES

A. Testing Agency, including independent testing laboratories, will be licensed and authorized to operate in jurisdiction in which Project is located.
1. Approved Testing Agency Qualifications: Requirements of Section 01 4301 apply.

B. Testing and Inspection Services:
1. Testing Agency will not release, revoke, alter, or increase Contract Document requirements or approve or accept any portion of the Work.
2. Testing Agency will not give direction or instruction to Contractor.
3. Testing Agency will have full authority to see that the Work is performed in strict accordance with requirements of Contract Documents and directions of Owner’s Representative and/or Architect.

4. Testing Agency will not provide additional testing and inspection services beyond scope of Work without prior approval of Owner's Representative and / or Architect.

C. Testing Agency Duties:
1. Independent Testing Agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual specification Sections will cooperate with Architect and Contractor in performance of its duties and will provide qualified personnel to perform required inspections and tests.
2. Testing Agency will test or obtain certificates of tests of materials and methods of construction, as described herein or elsewhere in technical specification.
3. Testing Agency will provide management, personnel, equipment, and services necessary to perform testing functions as outlined in this section.
4. Testing Agency must have experience and capability to conduct testing and inspecting indicated by ASTM standards and that specializes in types of tests and inspections to be performed.
5. Testing Agency will comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3666, ASTM D3740, and other relevant ASTM standards.

D. Testing and Inspection Reports:
1. Conduct and interpret tests and inspections and state in each report whether tested and inspected the Work complies with or deviates from requirements.
2. Inspection Reports:
   a. Testing Agency will furnish 'Inspection at Site' reports for each site visit documenting activities, observations, and inspections.
   b. Include notation of weather and climatic conditions, time and date conditions and status of the Work, actions taken, and recommendations or evaluation of the Work.
3. Reporting Testing and Inspection (Conforming Work):
   a. Submit testing and inspection reports as required within twenty four (24) hours of test or inspection having been performed.
4. Reporting Testing and Inspection Defective Work (Non-Conforming Work):
   a. Testing Agency, upon determination of irregularities, deficiencies observed or test failure(s) observed in the Work during performance of its services of test or inspection having been performed, will:
      1) Verbally notify results to Architect, Contractor, and Owner's Representative within one hour of test or inspection having been performed (if Defective Work (Non-Conforming Work) is incorporated into project).
      2) Submit written inspection report and test results as required within twenty four (24) hours of test or inspection having been performed.
   b. Prepare non-compliance log to track non-compliant testing or inspections.
5. Final Report:
   a. Submit final report of tests and inspections at Substantial Completion, which identify unresolved deficiencies.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Field Tests And Inspections:
1. Field Tests and Inspections requirements are described in 'Field Quality Control' of individual Sections in Division 01 through Division 49.

END OF SECTION

SECTION 01 5100

TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Temporary Utilities.
   2. Intent is for Contractor to use existing site and building utilities during construction efforts.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Where necessary, engage appropriate local utility companies to install temporary service or connect to existing service. Where utility company provides only part of service, provide remainder with matching, compatible materials and equipment. Comply with utility company's recommendations.
   1. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.
   2. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.
   3. Arrange with utility company and existing users for time when service can be interrupted, where necessary, to make connections for temporary services.
   4. Use qualified personnel for installation and maintenance of temporary facilities. Locate temporary utilities where they will serve Project adequately and result in minimum interference with the Work of Owner or other Contractors on Project Site. Relocate and modify temporary utilities as required.

B. Prepare schedule indicating dates for implementation and termination of each temporary utility. At earliest feasible time, change over from use of temporary service to use of permanent service.

C. Keep temporary utilities clean and neat in appearance. Operate in safe and efficient manner. Take necessary fire prevention measures. Do not overload utilities, or allow them to interfere with progress of The Work. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on Project site.

D. Limit availability of temporary utilities to essential and intended uses to reduce waste and abuse.

E. Maintain temporary utilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

F. Remove each temporary utility and control when need has ended, or when replaced by permanent utility, but not later than Substantial Performance. Complete permanent construction that may have been delayed because of interference with temporary utility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that make up temporary utilities are property of Contractor.

1.3 TEMPORARY ELECTRIC POWER

A. Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period.

1.4 TEMPORARY FIRE PROTECTION

A. Install and maintain temporary fire protection facilities of types needed to protect against predictable and controllable fire losses. At a minimum, provide and maintain in working order two Standard ULC Labeled ABC all-purpose 10 lb fire extinguishers.
   1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher.
   2. Store combustible materials in containers in fire-safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires.

1.5 HEATING, COOLING, AND VENTILATING:

A. Maintain safe conditions for use of temporary heating, cooling, and ventilating systems including, but not limited to, following requirements:
   1. Operate equipment according to equipment manufacturer's instructions.
   2. Provide fresh air ventilation required by equipment manufacturer.
   3. Keep temperature of fuel containers stabilized.
   4. Secure fuel containers from overturning.
   5. Operate equipment away from combustible materials.

1.6 TEMPORARY LIGHTING

A. Install and operate temporary lighting that will provide adequate illumination for construction operations and traffic conditions.

1.7 TEMPORARY TELEPHONES

A. Provide temporary telephone service for all personnel engaged in construction activities, throughout construction period.

B. Contractor will pay for Local calls. Party making call will pay for long-distance and toll calls.

C. At each telephone, post list of important telephone numbers.

1.8 TEMPORARY WATER SERVICE

A. Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 5200

CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Construction Facilities.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Prepare schedule indicating dates for implementation and termination of each temporary facility.

B. Keep temporary facilities clean and neat in appearance. Operate in safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or allow them to interfere with progress of The Work. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on Project site.

C. Maintain facilities in good operating condition until removal.

D. Remove each temporary facility when need has ended, or when replaced by authorized use of permanent facility, or by Substantial Performance. Complete permanent construction that may have been delayed because of interference with temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that make up temporary facilities are property of Contractor.
   2. By Substantial Performance, clean and renovate permanent facilities used during construction period.

1.3 FIELD OFFICES

A. Provide and maintain insulated, weather tight temporary office of sufficient size to accommodate Contractor's personnel at Project site and for use by Owner, Architect and Subcontractors.
   1. Keep office clean and orderly.
   2. Heat and cool office as needed.
   3. Furnish office with locking door, light(s), table(s), bench(es), rack(s) for drawings, telephone, and email service.
   4. Make office available for progress meetings.
   5. Provide an operable fire extinguisher in facility.
   6. Provide hardhats for Owner’s Representatives for site visits.

1.4 SANITARY FACILITIES

A. Provide temporary sanitary toilets. Service and maintain temporary toilets in a clean, sanitary condition. Do not use existing building washrooms.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 5400

CONSTRUCTION AIDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Construction Aids.

1.2 SCAFFOLDING, PLATFORMS, FALL PROTECTION, STAIRS, ETC

A. Furnish and maintain equipment such as temporary stairs, ladders, ramps, platforms, scaffolds, hoists, runways, derricks, chutes, and fall protection as required for proper execution of The Work.

B. Apparatus, equipment, and construction shall meet requirements of applicable laws and safety regulations.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 5600

TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Temporary Barriers and Enclosures.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Protection Of Existing Improvements: Protect City streets, roads, curb/ gutter, landscape, and sidewalks, including overhead protection where required. Before commencing site work, photo document/ archive existing conditions. Repair damage to existing improvements caused by construction activities.

B. Protection Of Adjacent Property: Provide necessary protection for adjacent property and lateral support thereof.

C. Proprietary Camera Services: In its absolute discretion, and with or without notice to Contractor, Owner may provide from time to time, but is not obligated to provide, one or more cameras on or about Project site and/or signage or notices of the same:
   1. If provided by Owner, such camera(s) and/or signage and notices are solely for Owner's benefit and convenience and shall not be for benefit of Contractor, Subcontractor(s) or for any third person.
   2. Owner shall have no liability, obligation, or responsibility to Contractor, Subcontractors, or any third person relative to such camera(s), signage, or notices, or absence of camera(s), signage, or notices, including without limitation, installation, maintenance, operation, repair, testing, functionality, capacity, recording, monitoring, posting, etc., of the same (hereafter 'Proprietary Camera Services').
   3. Contractor, with Owner's prior consent (which shall not be unreasonably withheld), may relocate such camera(s), signage, or notices as necessary to not unreasonably, materially and physically interfere with work at Project Site.
   4. Contractor's obligations under Contract Documents, including but not limited to, Contractor's obligation for security of Project Site, are not modified by Owner's opportunity to provide, actually providing, or not providing Proprietary Camera Services and/or signage or notices regarding the same.
   5. This Specification Section does not preclude Contractor from providing its own camera(s), signage, or notices pursuant to terms and conditions of this Agreement. Neither does this Section reduce, expand or modify any other right or obligation of Owner pursuant to terms of this Agreement.

1.3 TEMPORARY BARRICADES

A. Comply with standards and code requirements in erecting barricades, warning signs, and lights.

B. Take necessary precautions to protect persons, including members of the public, from injury or harm.

1.4 TEMPORARY SECURITY BARRIERS

A. Install temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and other violations of security.

B. Secure materials and equipment stored on site.

C. Secure building at the end of each work day.

D. Maintain exterior building security until Substantial Performance.

1.5 TEMPORARY TREE AND PLANT PROTECTION

A. Protection:
1. Before commencing site work, photo document / archive existing trees and vegetation around site and building roof perimeter.
2. Individual trees and shrubs shall be protected by Contractor from demolition and construction related damages.
3. Properly trim shrubs along building perimeter as described in Drawings to allow scope of work. This work shall be done by a qualified sub trade, not the roofing sub trade.
4. Keep City boulevards undisturbed and do not use areas for any purpose.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 5700

TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Temporary Controls.

1.2 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or off-site drainage systems.

B. Repair and correct damage caused by erosion.

1.3 TEMPORARY ENVIRONMENTAL CONTROLS

A. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and reduce possibility that air, waterways, and subsoil might be contaminated or polluted, or that other undesirable effects might result:
   1. Avoid use of tools and equipment that produce harmful noise.
   2. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near site.

B. Provide protection against weather (rain, winds, storms, frost, or heat) to maintain all work, materials, apparatus, and fixtures free from injury or damage.

C. Protect exposed building from damage from rain water:
   1. Stage demolition and construction efforts to maintain a watertight building envelope.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 5800

PROJECT IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Project Identification.

1.2 TEMPORARY PROJECT SIGNAGE

A. Contractor may, at its option, erect a temporary project identification sign.
   1. Sign may be attached to temporary field office.
   2. No other signs or advertisements are allowed on building site.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 6100

COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Common Product Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Provide products that comply with Contract Documents, that are undamaged, and, unless otherwise indicated, new and unused at time of installation. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.

B. Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on surfaces of products that will be exposed to view in occupied spaces or on building exterior.
   1. Locate required product labels and stamps on concealed surface or, where required for observation after installation, on accessible surface that is not conspicuous.

C. Where specifications describe a product or assembly by specifying exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides specified characteristics and otherwise complies with Contract requirements.

D. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application described. General overall performance of product is implied where product is specified for specific application. Manufacturer's recommendations may be contained in published product literature, or by manufacturer's certification of performance.

E. Where specifications only require compliance with an imposed code, standard, or regulation, select product that complies with standards, codes or regulations specified.

F. Where Specifications require matching an established Sample, Architect's decision will be final on whether proposed product matches satisfactorily. Where no product available within specified category matches satisfactorily nor complies with other specified requirements, refer to Architect.

G. Where specified product requirements include phrase ` . . . *as selected from manufacturer's standard colors, patterns, textures* . . . ' or similar phrase, select product and manufacturer that comply with other specified requirements. Architect will select color, pattern, and texture from product line selected.

H. Remove and replace products and materials not specified in Contract Documents but installed in the Work with specified products and materials at no additional cost to Owner and for no increase in Contract time.

I. Informational Submittals:
   1. Sustainable Design Submittals:
      a. Submit electronic files: PDF. Architect will return a PDF copy marked with action taken and with corrections or modifications required.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 6200

PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Product Options.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Product Selection:
   1. When option of selecting between two or more products is given, product selected will be compatible with products previously selected, even if previously selected products were also options.

B. Non-Conforming Work:
   1. Non-conforming work as covered in Article 12.3 of General Conditions applies, but is not limited, to use of non-specified products or manufacturers.

C. Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include:
   1. Substitutions And Equal Products:
      a. Generally speaking, substitutions for specified products and systems, as defined in the Uniform Commercial Code, are not acceptable. However, equal products may be approved upon compliance with Contract Document requirements.
      b. Approved Products / Manufacturers / Suppliers / Distributors / Fabricators / Installers:
         1) Category One or VMR:
            a) Owner has established ‘Relationships’ that extend beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
            b) Specification Sections specify Owner Furnished and Owner Installed Manufacturers or Products.
            c) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
         2) Category Two:
            a) Owner has established ‘Relationships' that contain provisions extending beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
            b) Specification Sections specify Owner Furnished and Contractor Installed Manufacturers, Suppliers, Distributors or Products.
            c) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
         3) Category Three:
            a) Owner has established ‘Relationships' that contain provisions extending beyond requirements of this Project. Use these products to preserve advantages that accrue to Owner from those programs. No substitutions or equal products will be allowed on this Project.
            b) Specification Sections specify Contractor Furnished and Contractor Installed Manufacturers, Suppliers, Distributors, Fabricators or Products.
         4) Category Four:

a) Provide only specified products available from manufacturers listed. No substitutions, private-labeled, or equal products, or mixing of manufacturers' products is allowed on this Project.
b) In Sections where lists recapitulating Manufacturers previously mentioned in Section are included under heading '*Manufacturers*' or '*Approved Manufacturers*', this is intended as a convenience to Contractor as a listing of contact information only. It is not intended that all manufacturers in list may provide products where specific products and manufacturers are listed elsewhere in Section.

c. Acceptable Products / Manufacturers / Suppliers / Installers:
1) Type One: Use specified products / manufacturers unless approval to use other products / manufacturers has been obtained from Architect by Addendum.
2) Type Two: Use specified products / manufacturers unless approval to use other products and manufacturers has been obtained from Architect in writing before installing or applying unlisted or private-labeled products.
3) Use 'Equal Product Approval Request Form' to request approval of equal products, manufacturers, or suppliers before bidding or before installation, as noted in individual Sections.

d. Quality / Performance Standard Products / Manufacturers:
1) Class One: Use specified product / manufacturer or equal product from specified manufacturers only.
2) Class Two: Use specified product / manufacturer or equal product from any manufacturer.
3) Products / manufacturers used shall conform to Contract Document requirements.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 6400

OWNER - FURNISHED PRODUCTS

PART 1 - GENERAL

1.1 SUMMARY

A. Administrative and procedural requirements for Owner-Furnished Products. Install items furnished by Owner or receive and store in safe condition items purchased directly by Owner according to requirements of Contract Documents:
   1. None proposed.

1.2 ADMINISTRATIVE REQUIREMENTS

A. General:
   1. Review 'Contractor Notice of Owner Furnished Materials' notice listing Owner-furnished products to be delivered for Project:
      a. Review due (delivery) dates and vendor lead times for each item and coordinate with construction schedule. Immediately report recommended changes to Owner's Purchasing Coordinator listed in 'Contractor Notice of Owner Furnished Materials'. Contact vendors directly if changes to delivery dates become necessary during construction.
      b. Report problems in coordinating due (delivery) dates with construction schedule to Architect and Owner's Purchasing Coordinator.
   2. Receive unload, store and protect Owner-furnished materials and products.
      a. Provide labor and equipment necessary to receive, unload, and store materials and products.
      b. Count number of pieces received and note any discrepancies on Delivery Receipt before driver leaves:
         1) Compare ' Contractor Notice of Owner Furnished Materials' notice' with packing slips.
         2) Note discrepancies in number, size, color, model numbers, etc. on Delivery Receipt.
      c. Include Project Name and Project Number on Delivery Receipt.
      d. Check for visible evidence of damage such as holes, tears, or crushed portions of cartons and note on Delivery Receipt before driver leaves:
         1) Include Project Name and Project Number on Delivery Receipt.
         2) If you are unsure if carton is damaged, take photo of cartons and share it with Owner's Purchasing Coordinator.
      e. Properly store and protect all deliveries of Owner Furnished materials and Products.
   3. Within forty-eight (48) hours of delivery:
      a. Open and inspect each piece of freight delivered. Take picture of any concealed damage not reported at time of delivery and report it to Owner's Purchasing Coordinator.
      b. Compare 'Contractor Notice of Owner Furnished Materials' with packing slips. Note discrepancies in number, size, color, model numbers, etc.
      c. Deliver copy of Delivery Receipt (bill of lading) on which you have noted any loss or damage to Owner's Purchasing Coordinator. Include in your submission any report of concealed damage, discrepancies or photos.
   4. Failure to strictly follow above procedures will result in your assumption of all financial responsibility for this shipment. All replacement and reorders must be made through Owner's Purchasing Coordinator and must allow Owner's vendor sufficient lead time to produce and ship new product.
   5. When above procedures are strictly followed, shortages and damaged items will be replaced by Owner at Owner's cost.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 6600

PRODUCT DELIVERY, STORAGE, AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Product Delivery, Storage, and Handling Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1.3 DELIVERY AND ACCEPTANCE REQUIREMENTS

A. Schedule delivery to reduce long-term storage at site and to prevent overcrowding of construction spaces.

B. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

C. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

D. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.

1.4 STORAGE AND HANDLING REQUIREMENTS

A. Store products at site in manner that will simplify inspection and measurement of quantity or counting of units.

B. Store heavy materials away from Project structure so supporting construction will not be endangered.

C. Store products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 7300

EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for governing Execution of the Work.

1.2 COMMON INSTALLATION PROVISIONS

A. Manufacturer's Instructions: Comply with Manufacturer's installation instructions and recommendations to extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents. Notify Architect of conflicts between Manufacturer's installation instructions and Contract Document requirements.

B. Provide attachment and connection devices and methods necessary for securing Work. Secure work true to line and level. Anchor each product securely in place, accurately located, and aligned with other Work. Allow for expansion and building movement.

C. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain best visual effect. Refer questionable choices to Architect for final decision.

D. Install each component during weather conditions and Project status that will ensure best possible results. Isolate each part of completed construction from incompatible material as necessary to prevent deterioration.

E. Coordinate temporary enclosures with required inspections and tests, to reduce necessity of uncovering completed construction for that purpose.

F. Mounting Heights: Where mounting heights are not shown, install individual components at standard mounting heights recognized within the industry or local codes for that application. Refer questionable mounting height decisions to Architect for final decision.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

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SECTION 01 7400

CLEANING AND WASTE MANAGEMENT

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Administrative and procedural requirements for Cleaning and Waste Management as described in Contract Documents.

B. Related Requirements:
   1. Section 01 1200: Coordination of responsibilities for waste management.
   2. Section 01 6400: Waste removal of Owner furnished products.
   3. In addition to standards described in this section, comply with all requirements for cleaning-up as described in various other Sections of these Specifications.

1.2 REFERENCES

A. Definitions:
   1. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
   2. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
   3. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
   4. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
   5. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
   6. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.

B. Keep premises broom clean during progress of the Work.

C. Keep site and adjoining streets reasonably clean.

D. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Performance.

E. Clean and maintain completed construction as frequently as necessary throughout construction period.

F. Supervise construction activities to ensure that no part of construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

G. Before and during application of painting materials, clear area where such work is in progress of debris, rubbish, and building materials that may cause dust.

H. Clean exposed surfaces and protect as necessary to avoid damage and deterioration.

I. Place extra materials of value remaining after completion of associated work have become Owner's property as directed by Owner or Architect.

J. Construction Waste Management And Disposal:
   1. Remove waste materials and rubbish caused by employees, Subcontractors, and contractors under separate contract with Owner and dispose of legally. Remove unsuitable or damaged materials and debris from building and from property.
      a. Provide adequate waste receptacles and dispose of materials when full.
      b. Properly store volatile waste and remove daily.
      c. Do not deposit waste into storm drains, sanitary sewers, streams, or waterways. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
   2. Do not burn waste materials or build fires on site. Do not bury debris or excess materials on Owner's property.

3.2 FINAL CLEANING

A. Immediately before Substantial Performance, thoroughly clean areas where The Work was performed. Remove all rubbish from under and about building, landscaped areas and parking lot and leave building and Project Site ready for occupancy by Owner.

B. Comply with individual manufacturer's cleaning instructions.

C. Clean each surface or unit to condition expected in normal, commercial building cleaning and maintenance program, including but not limited to:
   1. Exterior Cleaning:
      a. Remove marks, stains, and dirt from exterior surfaces.
      b. Remove temporary protection systems.
      c. Clean dirt, mud, and other foreign material from paving, sidewalks, and gutters.
      d. Clean granules, metal clippings, screws, etc…from roofing, gutters, valleys.
      e. Remove trash, debris, and foreign material from landscaped areas, building perimeter planters.
      f. Perform a magnetic sweep of building perimeter.

END OF SECTION

SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Closeout Procedures.

1.2 GENERAL

A. Closeout process consists of three specific project closeout inspections. Contractor shall plan sufficient time in construction schedule to allow for required inspections before expiration of Contract Time.

B. Contractor shall conduct his own inspections of The Work and shall not request closeout inspections until The Work of the contract is reasonably complete and correction of obvious defects or omissions are complete or imminent.

C. Date of Substantial Performance shall not occur until completion of construction work, unless agreed to by Architect and included on Certificate of Substantial Performance.

1.3 PRELIMINARY CLOSEOUT REVIEW

A. When Architect, Owner and Contractor agree that project is ready for closeout, Pre-Substantial Inspection shall be scheduled.

B. Architect, together with Contractor and Owner shall conduct a space by space and exterior inspection to review materials and workmanship and to demonstrate that systems are operational.
   1. Punch list of items requiring completion and correction will be created.
   2. Time frame for completion of punch list items will be established, and date for Substantial Performance Inspection shall be set.

1.4 SUBSTANTIAL PERFORMANCE INSPECTION

A. When Architect, Owner and Contractor agree that project is ready for Substantial Performance, an inspection is held. Punch list created at Pre-Substantial Inspection is to be substantially complete.

B. Prior to this inspection, Contractor shall discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements.

C. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Performance of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Performance that contains:
   1. Date of Substantial Performance.
   2. Punch List Work not yet completed, including seasonal and long lead items.
   3. Amount to be withheld for completion of Punch List Work.
   4. Time period for completion of Punch List Work.
   5. Amount of liquidated damages set forth in Supplementary Conditions to be assessed if Contractor fails to complete Punch List Work within time set forth in Certificate.

D. Contractor shall present Closeout Submittals to Architect and place tools, spare parts, extra stock, and similar items required by Contract Documents in locations as directed by Facilities Manager.

1.5 FINAL ACCEPTANCE MEETING

A. When punch list items except for any seasonal items or long lead items which will not prohibit occupancy are completed, Final Acceptance Meeting is held.

B. Owner, Architect and Contractor execute Owner's Project Closeout - Final Acceptance form, and verify:
   1. All seasonal and long lead items not prohibiting occupancy, if any, are identified, with committed to completion date and amount to be withheld until completion.
   2. Final cleaning requirements have been completed.

C. If applicable, once any seasonal and long lead items are completed, Closeout Inspection is held where Owner and Architect verify that The Work has been satisfactorily completed, and Owner, Architect and Contractor execute Closeout portion of the Project Closeout - Final Acceptance form.

D. When Owner and Architect confirm that The Work is satisfactorily completed, Architect will authorize final payment.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

SECTION 01 7800

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes But is Not Limited To:
   1. Administrative and procedural requirements for Closeout Submittals.

B. Related Requirements:
   1. Section 01 3300: 'Submittal Procedures' for administrative and procedural requirements for submittal procedures.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Project Record Documents:
   1. Do not use record documents for construction purposes:
      a. Protect from deterioration and loss in secure, fire-resistive location.
      b. Provide access to record documents for Architect's reference during normal working hours.
   2. Maintain clean, undamaged set of Drawings:
      a. Mark set to show actual installation where installation varies from the Work as originally shown.
      b. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
      c. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
      d. Mark new information that is important to Owner, but was not shown on Drawings.
      e. Note related Change Order numbers where applicable.

B. As Built Record Drawings:
   1. As required in agreement with the Owner:
      a. Architect will provide two full-size sets of prints of the As Built Record Drawings to the Facilities Management Office, printed from the updated AutoCAD drawing files, as specified by Owner, that have been modified to show actual dimensions and location of equipment, material, utility lines, and other work as actually constructed, based upon information provided by Contractor. Architect will submit updated As Built Record Drawings in PDF (ISO32000 format) to Owner.

1.3 CLOSEOUT SUBMITTALS

A. Operations And Maintenance Manual:
   1. General:
      a. Include closeout submittal documentation as required by Contract Documentation.
      b. Include workmanship bonds, final certifications, and similar documents.
      c. Releases enabling Owner unrestricted use of The Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
      d. Include Project photographs, damage or settlement survey, and similar record information required by Contract Documents.
      e. Submittal Format:
         1) Digital copies unless otherwise noted, required for each individual specification section that include 'Closeout Submittals'.
         2) Include only closeout submittals as defined in individual specification section as required in Contract Documents.

2. Project Manual:
   a. Copy of complete Project Manual including Addenda, Modifications as defined in General Conditions, and other interpretations issued during construction:
      1) Mark these documents to show variations in actual Work performed in comparison with text of specifications and Modifications.
      2) Show substitutions, selection of options, and similar information, particularly on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
3. Operations and Maintenance Data:
   a. Digital format only:
      1) Cleaning instructions.
      2) Maintenance instructions.
4. Warranty Documentation:
   a. Digital format of final, executed warranties.
5. Record Documentation:
   a. Digital format only.
      1) Certifications.
      2) Color and pattern selections.
      3) Design Data.
      4) Manufacture Reports.
      5) Manufacturer's literature or cut sheets.
      6) Shop Drawings.
      7) Testing and Inspection Reports.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Submit item(s) required by Section 01 3300 ‘Submittal Procedures’ and as defined in individual specification section if required in Contract Documents. Items may be provided at completion of Work or with Closeout Submittals.

1.5 WARRANTIES

A. When written guarantees beyond one (1) year after substantial performance are required by Contract Documents, secure such guarantees and warranties properly addressed and signed in favor of Owner. Include these documents in Operations & Maintenance Manual(s) specified above.

B. Delivery of guarantees and warranties will not relieve Contractor from obligations assumed under other provisions of Contract Documents.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

DIVISION 06: WOOD, PLASTICS, AND COMPOSITES

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SECTION 06 1011

WOOD FASTENINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Quality of wood fastening methods and materials used for Rough Carpentry unless specified otherwise.

B. Related Requirements:
   1. Furnishing and installing of other fasteners are specified in individual Sections where installed.

1.2 REFERENCES

A. Reference Standards;
   1. ASTM International:
      a. ASTM A153/A153M-16a, ‘Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware’.
      b. ASTM F1667-18a, ‘Standard Specification for Driven Fasteners: Nails, Spikes, and Staples’.
   2. CSA Group (Canadian Standards Association):
      a. CSA O112.9-10 (R2014), 'Evaluation of adhesives for structural wood products (exterior exposure)'.
      b. CSA O112 Series-M1977 (R2006), 'CSA Standards for Wood Adhesives':
         1) CSA O112.6-1.1, 'Resourcinol and Phenol-Resourcinol Resin Adhesive for Wood (High Temperature Curing)’ (Withdrawn).
         2) CSA O112.7-1.1, 'Resourcinol and Phenol-Resourcinol Resin Adhesive for Wood (Room and Intermediate Temperature Curing)’ (Withdrawn).

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer's literature on framing anchors.
   2. Shop Drawings:
      a. Submit diameter and lengths of fasteners proposed for use on Project. If length or diameter of proposed fasteners differ from specified fasteners, also include technical and engineering data for proposed fasteners including, but not limited to:
         1) Adjusted fastener spacing where using proposed fasteners and,
         2) Adjusted number of fasteners necessary to provide connection capacity equivalent to specified fasteners.
      b. Show type, quantity, and installation location of framing anchors. Where necessary, reference Drawing details, etc, for installation locations.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Description:
   1. Nail Terminology:

a. When following nail terms are used in relation to this Project, following lengths and diameters will be understood. Refer to nails of other dimensions by actual length and diameter, not by one of listed terms:

Nail Term	Length	Diameter	Length	Diameter
8d Box	2-1/2 inches	0.113 inch	63.5 mm	2.827 mm
8d Common	2-1/2 inches	0.131 inch	63.5 mm	3.389 mm
10d Box	3 inches	0.128 inch	76.2 mm	3.251 mm
10d Common	3 inches	0.148 inch	76.2 mm	3.759 mm
16d Box	3-1/2 inches	0.135 inch	88.9 mm	3.411 mm
16d Sinker	3-1/4 inches	0.148 inch	82.6 mm	3.759 mm
16d Common	3-1/2 inches	0.162 inch	88.9 mm	4.115 mm

B. Materials:
1. Fasteners:
a. Nails:
1) Meet requirements of ASTM F1667.
2) CSA B111.
3) CAN/CSA-G164.
4) Unless noted otherwise, nails listed on Drawings or in Specifications shall be galvanized, common nail diameter, except 16d nails, which shall be box diameter.
b. Wood Screws:
1) SDS Screws:
a) Category Four Approved Products. See Section 01 6200 for definitions of categories.
(1) SDS Screws by Simpson Strong Tie Co, Dublin, CA www.strongtie.com.
2) All Other: Standard type and make for job requirements.
2. Adhesives:
a. Construction Mastics:
1) Meet requirements of 'APA-The Engineered Wood Association' Specification AFG-01 or ASTM D3498 or CSA O112 standards.
2) Use phenol-resorcinol type for use on pressure treated wood products.
3. Framing Anchors:
a. Framing anchors and associated fasteners to be hot dipped zinc-coated galvanized steel or stainless steel. Do not use stainless steel items with galvanized items.
b. Type Two Acceptable Products:
1) KC Metals Inc, San Jose, CA www.kcmetals.com.
2) Simpson Strong Tie Co, Dublin, CA www.strongtie.com.
3) Equals as approved by Architect through shop drawing submittal before installation. See Section 01 6200.

PART 3 - EXECUTION

3.1 ERECTION

A. Secure one Manufacturer approved fastener in each hole of framing anchor that bears on framing member unless approved otherwise in writing by Architect.

END OF SECTION

SECTION 06 1100

WOOD FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install wood framing and blocking to existing fascia / soffit structure and for roofing repairs, crickets, and curb build-outs as described in Contract Documents.

B. Products Installed But Not Furnished Under This Section:
   1. Related blocking.
   2. Wood panel product sheathing.

C. Related Requirements:
   1. Section 06 1636: 'Wood Panel Product Sheathing'

1.2 REFERENCES

A. Reference Standards:
   1. Canadian Standards Association (CSA Group):
      a. CSA-O86-14, ‘Engineering Design in Wood'.
      b. CSA-O141-05 (R2014), ‘Softwood Lumber'.
      c. CSA-O151-09 (R2014), ‘Canadian Softwood Plywood'.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference:
   1. Participate in MANDATORY pre-installation conference held jointly with Section 06 1636.
      a. Schedule pre-installation conference immediately before beginning framing work.
      b. In addition to agenda items specified in Section 01 3100, review following:
         1) Nails and nailing requirements.
         2) Connections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Protect lumber and sheathing and keep under cover in transit and at job site.
   2. Do not deliver material unduly long before it is required.

B. Storage And Handling Requirements:
   1. Store lumber and sheathing on level racks and keep free of ground to avoid warping.
   2. Stack to insure proper ventilation and drainage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Dimension Lumber:

1. Design Criteria:
   a. Grading:
      1) Lumber: Dimension lumber shall conform to CSA-O141 Species Group CSA-O86.1 as listed, and to National Lumber Grades Authority Standard Grading Rules, 1980 and Supplement 1 of 1984.
      2) Plywood: Canadian softwood plywood shall conform to CSA O151, standard grade exterior, unless specified otherwise.
   b. Identify lumber and sheathing/plywood by grade mark or Certificate of Inspection issued by approved lumber grading or inspection bureau or agency. Graded American lumber may be used, subject to CLSAB approval.
   c. Lumber 2 inches (50 mm) or less in nominal thickness shall not exceed 19 percent in moisture content at time of fabrication and installation and be stamped 'S-DRY', 'K-D', or 'MC15'.

B. All new framing material to be SPF #2 or better.

2.2 ACCESSORIES

A. Blocking:
   1. Sound lumber without splits, warps, wane, loose knots, or knots larger than 1/2 inch (13 mm).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Interface With Other Work:
   1. Coordinate with other Sections for location of blocking required for installation of soffit and building specialties. Do not allow installation of soffit until required blocking is in place.
   2. Where manufactured items are to be installed in framing, provide rough openings of dimensions within tolerances required by manufacturers of such items. Confirm dimensions where not shown on Contract Drawings.

B. Blocking (nailers) for Wood Framing:
   1. Furnish and install blocking in fascia / soffit framing and for roof repairs as described in Contract Documents.
      a. Attach blocking at trusses, stick framing, or walls with two 10d nails in each end of each piece of blocking.

END OF SECTION

SECTION 06 1636

WOOD PANEL PRODUCT SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install wood panel product sheathing required for crickets, curb build-outs, and roof sheathing infill as described in Contract Documents.
   2. See notes in Drawings to include 40 sheets of 5/8” plywood roof sheathing for repairs at Asphalt Roofing locations in bid price.
   3. See notes in Drawings to include 4 sheets of 5/8” plywood roof sheathing for repairs at EPDM Roofing locations in bid price.

B. Related Requirements:
   1. Section 06 1100: ‘Wood Framing’ for:
      a. Pre-installation conference held jointly with Section 06 1636.

1.2 REFERENCES

A. Association Publications:
   1. CSA Group:
      a. CSA O121-08 (R2013), ‘Douglas Fir Plywood'.
      b. CSA O151-09 (R2014), ‘Canadian Softwood Plywood'.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference:
   1. Participate in pre-installation conference as specified in Section 06 1100.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Do not deliver material unduly long before it is required.
   2. Protect sheathing and keep under cover in transit and at job site.

B. Storage And Handling Requirements:
   1. Store sheathing on level racks and keep free of ground.
   2. Stack to insure proper ventilation and drainage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Performance:
   1. Design Criteria:
      a. Unless specified otherwise, conform to CSA O151, standard grade exterior.
      b. Sheathing shall be COFI or Canadian Lumbermen's Association standard and grade marked accordingly.

B. Sheathing:
   1. Sheathing shall not exceed 18 percent moisture content when fabricated nor more than 19 percent when installed in Project.
   2. Sheathing used for same purpose shall be of same thickness. In all cases, thickness specified is minimum required regardless of span rating.
   3. Minimum span ratings for given thicknesses shall be as follows:

Thickness	Span Rating
9.5 mm	24 / 0
11 mm nominal	24 / 16
11.9 mm actual	32 / 16
12.5 mm nominal	32 / 16
15.1 mm actual	40 / 20
15.9 mm nominal	40 / 20
18.3 mm actual	48 / 24
19 mm nominal	48 / 24

2.2 ACCESSORIES

A. Nails:
   1. 10d (3”) galvanized Common nails as specified in Section 06 1011.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:
   1. Top of nail heads shall be flush with sheathing surface.
   2. Use of edge clips to provide spacing between sheathing panels is acceptable.

B. Roof Cricket and Infill Sheathing:
   1. Placing:
      a. Lay face grain at right angles to supports. Provide blocking for support as detailed.
      b. Provide 1/8 inch (3 mm) space between sheets at end and side joints.
      c. Stagger panel end joints.
      d. Sheathing shall be continuous of two spans minimum.
   2. Edge Bearing and Blocking:
      a. As indicated on Contract Drawings.
   3. Nail Spacing:
      a. 4” o.c. typical edges, 12” o.c. typical field.
      b. Place nails at least 3/8 inch (9.5 mm) in from edge.
   4. Thickness:
      a. Match existing or as indicated on Contract Drawings.

3.2 PROTECTION

A. Protect roof sheathing from moisture until roofing is installed.

END OF SECTION

DIVISION 07: THERMAL AND MOISTURE PROTECTION

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SECTION 07 2116

BLANKET INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install mineral wool batt insulation into roof top framing voids / crickets as detailed in Drawings.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      a. ASTM C665-17, ‘Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing'.
   2. Underwriters Laboratories of Canada (ULC):
      a. CAN/ULC S702.
      b. CAN/ULC S102.
      c. CAN/ULC S114.

1.3 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Insulation shall be manufactured and installed in compliance with 2018 British Columbia Building Code.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Manufacturers:
   1. Insulation:
      a. Type One Acceptable Manufacturers:
         1) Rockwool – Roxul Comfortbatt.
         2) Equal as approved by Architect before bidding. See Section 01 6200.

B. Materials:
   1. Thermal Insulation:
      a. Order insulation by 'RSI' value rather than 'U' value, rating, or thickness.
      b. Unfaced Insulation:
         1) Friction fit, preformed unfaced mineral fiber insulation meeting requirements of CAN/ULC S702, Type 1.
      c. 'RSI' Value Required:
         1) Roof top framing voids / crickets:
            a) Enclosed Spaces: Fill framed cavity with batt of appropriate thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:
   1. Leave no gaps in insulation envelope.
   2. If two layers of insulation are used to fill voids, then stagger joints.

B. In Framing:
   1. Fit ends of batts snug against framing plates.
   2. Fit batts snug against stud framing at crickets.

END OF SECTION

SECTION 07 3113

ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install Asphalt Shingle Roofing System as described in Contract Documents.
   2. Note this roof is considered low slope and requires a double layer of primary underlayment to meet Manufacturer's details.

B. Products Installed But Not Furnished Under This Section:
   1. Miscellaneous flashing and sheet metal.
      a. Drip and Rake metal.
      b. Valley flashing.
      c. Miscellaneous Wall flashings.
   2. Pipe jacks.
   3. Ridge vents.

C. Related Requirements:
   1. Section 07 5323: 'EPDM Roofing' for coordination of roofing and flashing.
   2. Section 07 6210: 'Galvanized Steel Flashing And Trim'
   3. Section 07 6310: 'Steep Slope Roof Flashing: Asphalt Tile' for furnishing of roof flashing, pipe jacks, drip edge and miscellaneous flashing and sheet metal.
   4. Section 07 7123: 'Manufactured Gutters and Downspouts'
   5. Section 07 7226: 'Ridge Vent'

1.2 REFERENCES

A. Definitions:
   1. Flame Spread Classification: Categories as per ASTM E84/UL 723 or CAN/ULC S102:
      a. Class A: Highest fire-resistance rating for roofing as per ASTM E108. Indicated roofing is able to withstand severe exposure to fire exposure to fire originating from sources outside building.
      b. Class B: Fire-resistance rating indicating roofing materials are able to withstand moderate exposure to fire originating from sources outside of building.
      c. Class C: Fire-resistance rating indicating roofing materials are able to withstand light exposure to fire originating from sources outside of building.
   2. Shiner: Incorrectly placed nail which isn't covered by subsequent course of shingles.
   3. Wind Uplift: Wind-induced forces on roof system or components in roof system. Wind uplift generally includes negative pressure component caused by wind being deflected around and across surfaces of building and positive pressure component from air flow beneath roof deck.

B. Reference Standards:
   1. ASTM International:
      a. ASTM D226-09/D226M-17, 'Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing'.
      b. ASTM D1970/D1970M-18, 'Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection'.
      c. ASTM D3018/D3018M-11(2017), 'Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules'.
      d. ASTM D3019-17, 'Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered'.

e. ASTM D3161/D3161M-16a, ‘Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)'.
f. ASTM D3462/D3462M-16, ‘Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules'.
g. ASTM D4869/D4869M-16a, ‘Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing'.
h. ASTM D7158/D7158M-17, ‘Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)'.
i. ASTM E84-18b, ‘Standard Test Method for Surface Burning Characteristics of Building Materials’.
j. ASTM E108-17, ‘Standard Test Methods for Fire Tests of Roof Coverings’.
k. ASTM F1667-18, ‘Standard Specification for Driven Fasteners: Nails, Spikes, and Staples’.

2. Canadian Standards Association (CSA Group):
   a. CSA A123.1-05/A123.5-16, 'Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules / Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules'.
   b. CSA A123.22-08 (R2013), 'Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection'.
3. Standards Council of Canada:
   a. CAN/ULC-S102:2018, ‘Method of Test for Surface Burning Characteristics of Building Materials and Assemblies'.
   b. CAN/ULC-S107:2010-R2017, ‘Methods of Fire Tests of Roof Coverings'.
4. National Fire Protection Association:
   a. NFPA 101: ‘Life Safety Code’ (2015 Edition or most recent edition adopted by AHJ).
5. Underwriters Laboratories (UL):
   a. UL 580: 'Tests for Uplift Resistance of Roof Assemblies' (5th Edition).
6. Underwriters Laboratories of Canada:
   a. ULC 102: ‘Method of Test for Surface Burning Characteristics of Building Materials and Assemblies' (CAN/ULC S102) (7th Edition).
   b. ULC 107: ‘Methods of Fire Tests of Roof Coverings' (CAN/ULC S107-10) (3rd Edition).

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference:
   1. Participate in mandatory pre-installation conference:
      a. Roofing Installer’s Foreman and those responsible for installation of roofing to be in attendance. Include Shingle Manufacturer’s Representative if available.
   2. Schedule pre-installation conference at project site after completion of the installation of roof sheathing but before installation of any roofing system component.
   3. In addition to agenda items specified in Section 01 3100, review following:
      a. Review if Project is in high wind area.
      b. Review if Project could have ice dam problems.
      c. Review if Project could have fungus-algae resistance problems.
      d. Review Shingle Manufacturer’s ventilation requirements.
      e. Review Shingle Manufacturer’s Ambient Conditions requirements.
      f. Review existing roof conditions including moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
      g. Review proper valley, flashing, penetrations, secondary underlayment, sealants, and nailing requirements.
      h. Review racking installation method is not permitted.
      i. Review Cleaning and Disposal requirements.
      j. Review Special Procedure Submittal for Warranty Information to be given to Manufacturer before Manufacture will issue Roof Warranty by Installer.
      k. Review safety issues.

B. Sequencing:
   1. Sequence of Roofing Materials (see valley flashing detail 11/A-5 in Contract Drawings):
      a. Apply 12 inches (300 mm) wide strip of secondary underlayment around perimeter of roof and extending 1 inch (25 mm) over prefinished metal fascia.

b. Metal drip and rake edge.
c. Secondary underlayment (three (3) 36 inch (900 mm) wide strips around perimeter).
d. Secondary underlayment along ridge lines.
e. Secondary underlayment along all roof to wall / overbuild conditions. Extend 12 inches (305 mm) vertical minimum.
f. Apply three (3) continuous 36 inch (900 mm) wide sheets of secondary underlayment in valley.
g. Install one (1) continuous 36 inch (300 mm) wide strip of primary underlayment atop secondary underlayment and centered over valley.
h. Install formed valley metal over strip of primary underlayment.
i. Apply 12 inches (300 mm) wide strips of secondary underlayment lapping nailed edge of formed valley metal 3 inches (75 mm).
j. Primary underlayment over entire roof.
k. Asphalt shingles.
l. Ridge vent, Roof vents.
m. Counter flashings over step flashing.

2. Coordinate sequencing of roof vents, B-Vents and plumbing vents, and all roof related flashings.
3. Coordinate installation of Asphalt roofing with small sections of EPDM roofing. See details in Drawings for interface.

1.4 SUBMITTALS

A. Action Submittals:
1. Product Data:
a. Confirm color and style selection prior to ordering.

B. Informational Submittals:
1. Certificates:
a. Installers:
1) Provide current Certification for completion of certified training from Shingle Manufacturer.
2) Installer's signed certificate stating roofing system complies with Contract Documents performance requirements and work only performed by trained and authorized personnel in those procedures.
2. Tests And Evaluation Reports:
a. Manufacturer's test reports.
b. ICC-ESR evaluation report.
c. Wind speed coverage for warranted wind speed.
3. Manufacturers' Instructions:
a. Shingle Manufacturer's installation instructions and details for installation of secondary underlayment at penetrations, dormers, eaves, rakes, etc, to fit environmental conditions at Project.
4. Special Procedure Submittals:
a. Contact Owner's Representative (FM Group or Project Manager) for following information:
1) Installer to include following mandatory information to be added to 'Roofing Manufacturer System Warranty' submitted with Closing Documents.
a) Name of Owner (name of FM Group) Vancouver BC West FM Group
b) Mailing Address (FM office address) 20030 82 Avenue, Langley, BC, V2Y 2A8
c) Building Property ID (unique 7 digit identifier) 515-5169
d) Project site address: 701 Mann Avenue, Victoria, BC
e) Roof Completion Date _____
f) Any addition data required from Manufacturer.
2) Installer to include following mandatory information to be added to 'Roof Installer Workmanship Warranty' submitted with Closing Documents:
a) Name of Owner (name of FM Group) Vancouver BC West FM Group
b) Mailing Address (FM office address) 20030 82 Avenue, Langley, BC, V2Y 2A8
c) Building Property ID (unique 7 digit identifier) 515-5169
d) Project site address: 701 Mann Avenue, Victoria, BC
e) Roof Completion Date _____

f) Any addition data required from Manufacturer.

5. Qualification Statement:
   a. Installer:
      1) Asphalt Shingles:
         a) Provide Qualification documentation.

C. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Warranty Documentation:
         1) Asphalt Shingles:
            a) Final, executed copy of 'Roofing Manufacturer System Warranty' including wind speed coverage and required Owner mandatory information.
            b) Final, executed copy of 'Roof Installer Workmanship Warranty' including required Owner mandatory information.
         2) Verify mandatory information as specified in Special Procedure Submittal has been included in Final Warranty.
      b. Record Documentation:
         1) Manufacturers Documentation:
            a) Manufacturer's literature.
            b) Color selections.
            c) Test and evaluation reports.
         2) Roofing Inspection Documentation:
            a) Include copy of roof inspection report.
         3) Certificate: Installer statement of compliance for performance requirements.
         4) Certificate: Installer completion of certified training.
         5) Test And Evaluation Report: UL fire-resistance rating test report.
         6) Test And Evaluation Report: NFPA 101 Class A approval.
         7) Test And Evaluation Report: Wind resistance requirements required.

D. Maintenance Material Submittals:
   1. Extra Stock Materials:
      a. Provide one (1) square minimum of bundled shingles.

1.5 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Building Codes:
      a. Meet requirements for NFPA 101 Class A roof assembly.
      b. Roof system will meet requirements of all federal, provincial, and local codes having jurisdiction.
   2. Fall Protection: Meet requirement of fall protection as required by federal, provincial, and local codes having jurisdiction.
   3. Fire Characteristics:
      a. Provide shingles and related roofing materials with fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL / ULC or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency:
         1) Exterior Fire-Test Exposure: Class A; UL 790, CAN/ULC-S102, or ASTM E108, for application and roof slopes indicated.
            a) Materials shall be identified with appropriate markings of applicable testing agency.
   4. Impact Resistance:
      a. Meet UL 2218 impact resistant testing.
      b. Meet UL 2218 Class 4 impact resistant rating for hail.
   5. Wind Resistance:
      a. Meet ASTM D3161/D3161M for wind resistance.
         1) Installation shall comply with IBC Table 1507.2.7, 'Attachment'.
   6. Wind Speed:
      a. As required to meet local codes having jurisdiction.
   7. Wind Uplift Resistance:

a. Meet UL 580 wind uplift of roof assemblies.
b. Meet UL 1897 uplift test for roof covering systems.
c. Meet ASTM D7158/D7158M for wind resistance for uplift force/uplift resistance.

B. Qualifications:
1. Manufacturer:
a. Asphalt Shingles:
1) Asphalt shingles are required to be produced under quality control program administered by inspection agency currently accredited by ICBO ES or recognized by National Evaluation Service, Inc. Quality control manual developed in consultation with approved agency, and complying with ICBO ES Acceptance Criteria for Quality Control Manuals (AC10), must be submitted.
b. Underlayment:
1) Underlayment is required to be manufactured under approved quality control program with inspections by inspection agency accredited by International Accreditation Service (IAS) or otherwise acceptable to ICC-ES.
2) Quality documentation complying with ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted for roof underlayment.
2. Roof Installer Foreman Qualifications:
a. Requirements of Section 01 4301 applies but not limited to the following:
1) Provide documentation if requested by Architect.
a) Approved and authorized by Roofing Manufacturer to install Manufacturer's product and eligible to receive Manufacturer's warranty before bid.
b) Completed Shingle Manufacturer's certified trained.
c) Have thorough knowledge of installing asphalt shingle roofing and have minimum of five (5) years roofing experience.
d) Current license for the city where project is located and license for specific type of roofing work to be performed.
e) Roofing Installer's foreman shall be skilled in his trade and qualified to lay out and supervise the Work.
f) Flashing installation shall be performed by personnel trained and authorized by Roofing Manufacturer.
3. Roof Installer:
a. Provide 'Roof Installer Workmanship Warranty' as specified in Warranty in Part 1 of this specification.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
1. Make no deliveries to job site until installation is about to commence, or until approved storage area is provided.
2. Deliver products job site in Manufacturer's original unopened containers or wrappings with labels intact and legible bearing all seals and approvals.
3. Deliver materials in sufficient quantities to allow continuity of work.
4. Remove any material not approved from job site.

B. Storage And Handling Requirements:
1. Storage Requirements:
a. Follow Manufacturer's instructions and precautions for storage and protection of materials.
b. Protect roof materials from physical damage, moisture, soiling, and other sources in a clean, dry, protected location.
c. Stacking:
1) Shingles: Bundles should be stacked flat.
2) Underlayment:
a) Do not double-stack pallets.
b) Stack rolls upright until installation.
d. Temperature:
1) Shingles:
a) Store in covered ventilated area at maximum temperature of 110 deg F (43 deg C).

b) Use care in handling shingles when temperature is below 40 deg F (4.4 deg C).
2) Underlayment: Store in area with temperature between 40 deg F and 100 deg F (4.4 deg C and 38 deg C).
e. Unacceptable Material:
1) Remove from job site materials that are determined to be damaged by Architect or by Roofing Manufacturer and replace at no additional cost to Owner.
2. Handling Requirements:
a. Handle rolled goods so as to prevent damage to edge or ends.
3. Roof Top Loading:
a. Lay shingle bundles flat.
b. Do not bend over ridge.

1.7 FIELD CONDITIONS

A. Ambient Conditions:
1. General:
a. Proceed with installation only when existing and forecasted weather conditions permit roofing to be performed according to manufacturer's written instructions and warranty requirements.
2. Shingles:
a. Do not install shingles at lower temperatures than allowed by Shingle Manufacturer for application.
3. Underlayment:
a. Install self-adhering sheet underlayment within range of ambient and substrate temperatures recommended by manufacturer.

1.8 WARRANTY

A. Special Warranty:
1. Shingle Manufacturer's special forty (40) year minimum labor and material warranty written for The Church of Jesus Christ of Latter-Day Saints program, including but not limited to:
a. CertainTeed:
1) First ten (10) years minimum of warranty will provide for full replacement cost, including tear-off and disposal, for any failure, including material defects and workmanship. Remaining thirty (30) years of warranty will provide for pro-rated replacement cost.
2. Roofing system will resist blow-offs in winds up to 110 mph (177 kph) for ten (10) years when installed as specified below.
a. Meet requirements of ASTM D3161/D3161M UL Class D.
3. Algae resistance for fifteen (15) years.
4. Roof Installer Workmanship Warranty:
a. Provide ten (10) year workmanship warranty on roofing system and related components, including flashings, and responsible for all repairs to roofing system and related components due to roof installer’s own negligence or faulty workmanship:
1) In the event that, during ten (10) year period following installation, Roof Installer defaults or fails to fulfill its obligation in relation to workmanship warranty as specified in Manufacturer’s Agreement, Manufacturer will assume that obligation for remainder of ten (10) year period following original installation and Owner shall have no obligation to make or pay for repairs to or materials for roofing system that are necessary due to Roof Installer’s negligence or faulty installation during that period.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:

1. Manufacturer Contact List:
   a. CertainTeed Roofing Products, Valley Forge, PA www.certainteed.com.
      1) Contact Information: Wendy Fox, (800) 404-9880 wfox@dataworksintl.com.

B. Components:
   1. Shingles And Underlayment:
      a. Fiberglass mat shingles meeting or exceeding requirements of:
         1) UL Class A Fire Resistance.
         2) ASTM D3018/D3018M, Type I (self sealing).
         3) ASTM D3161/D3161M UL Class D.
         4) ASTM E108 Class A.
         5) CSA A123.1/A123.5 (Canadian standard).
         6) ASTM D3462/D3462M where required by local codes.
         7) Impact Resistant Shingles: Meet requirements of UL 2218 Class 4 Impact, ASTM E108 Class A Fire Resistance, ASTM D3161/D3161M Class F Wind, ASTM D7158/D7158M Class H Wind, ASTM D3018/D3018M Type 1, ASTM D3462/D3462M, and UL 790 Class A Fire Resistance.
         8) Secondary Underlayment: Meet requirements of ASTM D1970/D1970M and UL 790 Class A Fire Resistance.
         9) (Primary) Synthetic Underlayment: Meet requirements of ASTM D226/D226M and ASTM D4869/D4869M (physical properties only) or ASTM D1970/D1970M and ASTM E108 Class A Fire.
         10) Integral algae resistance.
         11) Colour to match CertainTeed Northgate Climate Flex “Max Def Heather Blend”.
      b. Category One VMR Products And Manufacturers. See Section 01 6200 for definitions of Categories:
         1) CertainTeed:
            a) Shingles:
               (1) Standard Wind: Northgate Climate Flex.
               (2) Hip And Ridge Shingles: Shadow Ridge Climate Flex.
            b) Primary Underlayment Under Shingles:
               (1) Synthetic Underlayment: Diamond Deck.
            c) Secondary Underlayment Under Shingles:
               (1) WinterGuard Granular.
                   or
               (2) WinterGuard Sand.

2.2 ACCESSORIES

A. Fasteners:
   1. Primary Underlayment:
      a. Corrosion resistant roofing nails with one inch (25 mm) diameter head and 3/4 inch (19 mm) long shank minimum.
         1) If shingles applied as underlayment is laid, use metal or plastic head Simplex roofing nails.
         2) If shingles not applied as underlayment is laid, use plastic head only.
      b. Staples not permitted.
   2. Shingles:
      a. Design Criteria:
         1) Meet following requirements for nails:
            a) Comply with ASTM F1667, Type I, Style 20-Roofing Nails.
            b) Eleven gauge galvanized steel or equivalent corrosion-resistant roofing nail.
            c) Nail head sizes: 3/8 inch (9.5 mm) nominal diameter.
            d) Sufficient length to penetrate through roof sheathing 1/4 inch (6 mm) or 3/4 inch (19 mm) minimum into solid wood decking.
            e) Hot-dipped galvanized or electroplated fasteners comply with requirements of ASTM A153, Class D.
            f) Stainless-steel fasteners meet requirements of Type 304 (UNS S30400) or Type 316 (UNS S31600).

b. General:
1) Hot-dipped galvanized, electroplated non-corrosive gun-driver nails, or stainless steel fasteners may be used.
2) Fasteners within 15 miles (24.1 km) of coastal areas (oceanside) applications must use hot-dipped galvanized or stainless steel.
3) All exposed fasteners (including ridge shingles) must use hot-dipped galvanized or stainless steel.
4) Staples not permitted.

B. Elastomeric Roofing Sealant:
1. Design Criteria:
a. Meet requirements of ASTM D3019/D3019M.
b. Non asphalt roofing cement (not permitted).
c. Elastomeric.
d. Cold temperature pliability.
e. Compatible with roof penetration boots.
2. Category Four Products And Manufacturers. See Section 01 6200 for definitions of Categories:
a. Flintbond SBS Modified Bitumen Caulk by CertainTeed.

C. Square Static Attic Vents:
1. Design Criteria:
a. Meet Manufacturer standards and locate as shown on Drawings
b. Lomanco: 770 Typical (750 at Storage Shed)
c. 70 in2 of NFA per vent.
d. Colour: Brown or Weathered Bronze. Submit sample for final selection.

D. Gravity Intake Ventilators:
1. Design Criteria:
a. Meet Manufacturer standards and locate as shown on Drawings
b. Carnes: GI.
c. 144 in2 of NFA per vent.
d. Colour: paint to match Cascadia Metals “Weathered Copper”.

E. Roof Deck Intake Strips:
1. Design Criteria:
a. Meet Manufacturer standards and locate as shown on Drawings
b. Lomanco: Deck Air DA-4.
c. 36 in2 of NFA per 4’-0” length of vent.
d. Colour: Black.

F. Underlayment under metal jack flashing, and under metal penthouse:
1. Provide Grace Ice and Watershield High Temperature (HT) rated peel and stick underlayment.

PART 3 - EXECUTION

3.1 INSTALLERS

A. VMR Manufacture’s Approved Roofing Installers: See Section 01 4301.
1. Victoria British Columbia:
a. CertainTeed:
1) Infinity Roofing, Eric Rae, 250-661-3722, ericisinfinity@hotmail.com
2) Golden Rule Roofing, Steven Rubin, 250-508-8260, info@goldenruleroofing.ca
3) Erikson Roofing, Gaetan Erikson, 250-618-0395, gaetan@eriksonroofing.com
4) Ridgeline Roofing, Josh Eiswerth, 250-981-8782, Admin@Ridgelinecorp.ca

3.2 EXAMINATION

A. Verification Of Conditions:
   1. Examine deck to determine if it is satisfactory for installation of roofing system. Conditions include, but are not limited to, moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
      a. Report unsatisfactory conditions in writing to Architect.
      b. Commencement of Work by installer is considered acceptance of substrate.
   2. Verify proposed soffit and ridge vents meet ventilation code requirements.
      a. Report inadequate ventilation conditions with recommendations in writing to Architect.

3.3 PREPARATION

A. Protection Of In-Place Conditions:
   1. Install only as much roofing as can be made weathertight each day, including flashing and detail work.

B. Surface Preparation:
   1. Clean roof deck:
      a. Remove dirt, protruding nails, shingle nails, and debris, before installation of underlayment.
   2. Roof deck must be dry to help prevent buckling of deck, which can result in deck movement and damage to primary underlayment.
   3. Following Manufacturer's recommendations for placing materials on roof.
      a. Prevent material from sliding off roof.
   4. Review existing roof sheathing and nail any raised nails back down flush to roof sheathing to allow for underlayment installation.

3.4 INSTALLATION

A. General:
   1. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.

B. Sequence of Roofing Materials as shown and noted in Contract Drawings:
   1. 12 inches (300 mm) strip of Secondary Underlayment along perimeter of roof and extending 1 inch (25 mm) over prefinished metal fascia.
   2. Metal Drip and Rake Edge.
   3. General Secondary Underlayment (three (3) strips of 36 inch (900mm) wide material).
   4. Secondary underlayment along ridge lines.
   5. Secondary underlayment along all roof to wall / overbuild conditions. Extend 12 inches (305 mm) vertical minimum.
   6. Valley Secondary Underlayment (8' - 6" (2.62 m) wide strip of Secondary Underlayment (3 strips) in Valleys applied over sheathing).
   7. (1) continuous 36 inch (300 mm) wide strip of primary underlayment atop secondary underlayment and centered over valley.
   8. Valley Metal (24 inch (610 mm) wide valley metal 10 ft (3.05 m) lengths).
   9. 12 inches (300 mm) strip of Secondary Underlayment over nailed edges (of Valley Metal).
   10. General Primary Underlayment over entire roof.
   11. Asphalt Shingles, Step Flashings.
   12. Ridge and roof vents.
   13. Counter Flashing.

C. Underlayment:
   1. General:
      a. Temporary Roof:
         1) Do not use permanent underlayment installation as temporary roof.

2) If temporary roof is used, remove completely before installation of permanent underlayment.

b. Follow Shingle Manufacturer's recommendations for installation of primary and secondary underlayment, particularly at eaves, rakes, and penetrations, unless specified installation procedures and Contract Drawing details are more stringent.

c. Avoid scuffing underlayment that can compromise surface and cause leaking. If scuffing occurs, following Manufacturer's recommendation for repair.

d. Staples are not permitted.

e. Weather conditions:

1) Do not leave underlayment exposed to weather more than thirty (30) days after beginning of underlayment installation even if Manufacture allows longer period of time.

2) If underlayment is exposed for more than thirty (30) days after beginning of underlayment installation, treat as temporary roof under first paragraph above.

3) If moisture is deposited on exposed underlayment, obtain written approval from Shingle Manufacturer's Representative before installing shingles.

f. Install valley secondary underlayment, valley primary underlayment, and valley metal after installation of general secondary underlayment, but before installation of general primary underlayment.

2. Primary Underlayment:

a. Apply 48 inch (1 200 mm) wide courses over complete deck, including areas covered with secondary underlayment unless specified otherwise. Review Manufacturer's literature for low slope application and double layer requirements.

1) Overlap underlayment before fastening.

2) Maintain end laps of 6 inch (150 mm) and side laps of 3 inch (76 mm).

3) Stop primary underlayment between 3 and 6 inches (75 and 150 mm) of inside edge of strip of secondary underlayment installed over edge of formed valley metal.

b. Nailing Synthetic Underlayment:

1) Use low-profile plastic or steel cap corrosion resistant nails with 1 inch (25 mm) diameter heads to fasten underlayment in place. (Fastening underlayment without caps is not permitted).

2) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.

3) Fasteners should be long enough to penetrate at least 3/4 inch (19 mm) into roof sheathing. Fasteners must be lie flush to roof deck at 90 degree angle to roof deck and tight with underlayment.

4) Do not nail through metal flashing, except drip edge, when installing primary underlayment.

5) Follow Shingle Manufacturer's installation instructions for following:

a) Securing underlayment to roof deck adjusting for roof slope nailing requirements.

b) Side lap, end lap, and overlapping nailing requirements.

c) Rake and eave nailing requirements.

d) High wind condition nailing requirements.

e) Sealant recommendations.

3. Secondary Underlayment:

a. Under Shingles:

1) Lap end joints 6 inches (150 mm) and side joints 3 inch (76 mm) minimum.

2) Apply three (3) 36 inch (900 mm) wide courses along eaves and rakes as described in Contract Documents with first course overlapping drip edge.

3) Apply up vertical face of all roof to wall / overbuild conditions 12 inches (305 mm) minimum.

4. Valley Underlayment:

a. Apply three (3) continuous 36 inch (900 mm) wide sheets of secondary underlayment in valley lapped so as to provide 102 inch (2 590 mm) wide covered area centered over valley.

b. Apply one (1) continuous 36 inch (300 mm) wide strip of primary underlayment atop secondary underlayment and centered over valley.

c. Install formed valley metal over strip of primary underlayment.

1) Nail top of each section and lap 8 inches (200 mm) in direction of flow.

2) Seal laps with continuous bead of elastomeric roofing sealant.

3) Secure edges of valley metal with fasteners spaced at 12 inches (300 mm) maximum on center and approximately 1/2 inch (13 mm) in from edge of metal.

d. Install 12 inches (300 mm) wide strips of secondary underlayment lapping nailed edge of formed valley metal 3 inches (75 mm).

D. Shingles:
1. Before installing shingles, inspect underlayment and metal installation with Architect and Owner. Correct improperly installed and damaged material before beginning shingle installation.
2. Racking installation method is not permitted by Owner and will be considered non-conforming work.
3. Starter shingles:
   a. Manufacturer's starter shingles are required for Warranty.
   b. Install shingles at eve and rakes in accordance with Shingle Manufacturer's instructions.
   c. Cut shingles in accordance with Shingle Manufacturer's instructions, or use approved starter course.
   d. Nail to eave granule side up in continuous mastic bed with cut edge down-slope and edge overhanging eave 3/8 inch (9 mm) so sealing tabs are at edge of eave.
   e. Install shingles with maximum exposure recommended by Shingle Manufacturer.
   f. Lay first course directly over starter strip with ends flush with starter strip at eaves and so joints in starter strip are offset 4 inches (100 mm) minimum from joints in first course.
4. Lay shingles so end joints are offset in accordance with Shingle Manufacturer's installation procedures.
5. Insure alignment by snapping chalk line at least each fifth course to control horizontal and vertical alignment.
6. Run courses true to line with end joints properly placed. Leave shingles flat without wave and properly placed. Align shingles with ridges to match existing installation.
7. Hip and ridge shingles:
   a. Manufacturer's hip and ridge shingles are required for Warranty.
   b. Install specified hip and ridge shingles in accordance with Shingle Manufacturer's instructions.
   c. Run ridge shingles as directed by Architect.
8. Nailing:
   a. General:
      1) Six (6) Nail Pattern as recommended by Shingle Manufacturer in each shingle.
      2) Place in relation to top edge of shingle as required by Shingle Manufacturer.
      3) Place nails one inch (25 mm) from each end of shingle and remainder evenly spaced between.
      4) Should any nail fail to penetrate sheathing by 1/4 inch (6 mm) minimum, drive additional nail nearby.
   b. Nailing guns:
      1) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
      2) Adjust nail gun pressure for nailing flush and tight to deck without cutting shingle surface.
      3) Drive nails perpendicular to shingle surface so nail head is flat against shingle.
      4) Should any nail fail to penetrate sheathing by 1/4 inch (6 mm) minimum, drive additional nail nearby.
9. Hand-Sealing:
   a. If ambient temperature or exposure to sun will not be sufficient to secure adhesive strip to under-lying shingle within one week, hand seal shingles with elastomeric roofing sealant.
10. Over valley metal:
   a. Do not drive nails through valley metal.
   b. Run chalk line so valley metal will be exposed 6 inches (150 mm) wide at top and diverge 3/32 inch (one mm) per ft (300 mm) down to eaves.
   c. Neatly trim shingles to this line.
   d. Seal trimmed shingle edges to valley metal with continuous bead of elastomeric roofing sealant applied within one inch (25 mm) of shingle edge.
11. Vent pipe sleeve flange – see details in Drawings:
   a. Vent pipe sleeve flange as specified in Section 07 6310.
   b. Fit shingles under lower edge and over sides and upper edge.
   c. Set vent pipe flange in elastomeric roofing sealant.
   d. Embed shingles in elastomeric roofing sealant where they overlap flange.

e. Apply bead of elastomeric roofing sealant at junction of vent pipe and vent flashing.

3.5 FIELD QUALITY CONTROL

A. Non-Conforming Work:
   1. Correct any work found defective or not complying with Contract Document requirements at no additional cost to the Owner.
   2. Raking installation method is not permitted by Owner and will be considered to be not complying with Contract Document requirements and must be corrected at no additional cost to Owner.

3.6 CLEANING

A. General:
   1. All tools and unused materials must be collected at end of each workday and stored properly off finished roof surface and protected from exposure to elements.
   2. Leave metals clean and free of defects, stains, and damaged finish.
      a. Replace fascia metal that is scratched through finish to base metal.
   3. Properly clean finished roof surface after completion.
   4. Verify drains and gutters are not clogged and filled with granules.
   5. Clean shingles and building of soiling caused by this installation.
   6. Clean and restore all damaged surfaces to their original condition.

B. Waste Management:
   1. Disposal:
      a. All work areas are to be kept clean, clear and free of debris at all times.
      b. Do not allow trash, waste, or debris to collect on roof. These items shall be removed from roof on a daily basis.
      c. Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current AHJ regulations and local laws.

3.7 PROTECTION

A. Do not permit traffic over finished roof surface.

END OF SECTION

SECTION 07 5323

ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING: EPDM

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install roofing membrane with flashings and other components to comprise total roofing system as described in Contract Documents including:
      a. Single-ply membrane.
      b. Fully adhered system.

B. Related Requirements:
   1. Section 06 1100: 'Wood Framing' for roof related blocking, nailing and sheathing.
   2. Section 07 3113: ‘Asphalt Shingles’ for coordination of roofing and flashing.
   3. Section 07 6210: ‘Galvanized Steel Flashing and Trim’ for metal work installation and requirements.

C. Products Installed But Not Furnished Under This Section:
   1. Sheet metal work including caps and flashing.

D. Related Requirements:
   1. Division 07 for sheet metal work specialties and accessories.

1.2 REFERENCES

A. Association Publications:
   1. American National Standards Institute / Single Ply Roofing Industry:
      a. ANSI/SPRI ES-1 2003, 'Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems'.
      b. ANSI/SPRI WD-1 'Wind Design Standard for Roofing Assemblies'.
   2. FM Global Resource Catalogue by FM Global, Norwood, MA www.fmglobal.com.
      a. Approval Guide:
         1) Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
      b. Property Loss Prevention Data Sheet 1-28, ‘Wind Design’ (latest edition).
      c. Property Loss Prevention Data Sheet 1-29, ‘Roof Deck Securement and Above-Deck Components’ (latest edition).
      d. Property Loss Prevention Data Sheet 1-49, ‘Perimeter Flashing’ (latest edition).

B. Definitions:
   1. Flame Spread Classification: Categories as per ASTM E84/UL 723 or ULC 102:
      a. Class A: Highest fire-resistance rating for roofing as per ASTM E108. Indicated roofing is able to withstand severe exposure to fire exposure to fire originating from sources outside building.
      b. Class B: Fire-resistance rating indicating roofing materials are able to withstand moderate exposure to fire originating from sources outside of building.
      c. Class C: Fire-resistance rating indicating roofing materials are able to withstand light exposure to fire originating from sources outside of building.

C. Reference Standards:
   1. ASTM International:
      a. ASTM C920-18, ‘Standard Specification for Elastomeric Joint Sealants'.
      b. ASTM C1289-18b, ‘Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board'.

c. ASTM C1303/C1303M-15, ‘Standard Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation’.
d. ASTM D4637/D4637M-15. ‘Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane'.
e. ASTM E84-18b, ‘Standard Test Method for Surface Burning Characteristics of Building Materials’.
f. ASTM E108-17, ‘Standard Test Methods for Fire Tests of Roof Coverings’.

2. International Building Code (IBC) (2018 edition or latest edition adopted by AHJ):
   a. Chapter 15, 'Roof Assemblies And Rooftop Structures':
      1) Section 1507, 'Requirements for Roof Coverings':
         a) 1507.12, ‘Thermoset Single-ply Roofing’.
3. National Fire Protection Association:
   a. NFPA 101: ‘Life Safety Code’ (2018 or most recent edition adopted by AHJ).
4. Underwriters Laboratories of Canada (ULC):
   a. ULC 102.2-18: ‘Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies' (ULC S102.2).
   b. ULC 107-10, ‘Methods of Fire Tests of Roof Coverings' (CAN/ULC-S107-10).
   c. ULC 770-15, ‘Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams' (CAN/ULC-S770-15).

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conferences:
   1. Participate in MANDATORY pre-installation conference.
      a. Roofing Membrane Manufacturer and Roofing Installer’s foreman and those responsible for installation of roofing to be in attendance.
   2. Schedule pre-installation conference at project site after completion of the installation of roof sheathing and before installation of any roofing system component.
   3. In addition to agenda items specified in Section 01 3100, review following:
      a. Review Manufacturer’s written instructions.
      b. Review if Project is in high wind area.
      c. Review delivery, storage, and handling requirements.
      d. Review ambient conditions requirements.
      e. Review roofing installation requirements including flashing and penetrations.
      f. Review roofing drainage requirements.
      g. Review temporary protections for roofing system.
      h. Review cleaning and disposal requirements.
      i. Review Special Procedure Submittal for Warranty Information to be given to Manufacturer before Manufacture will issue Roof Warranty by Installer.
      j. Review safety issues.
      k. Review field inspections and non-conforming work requirements.
      l. Review protection of membrane by other trades after installation of membrane.

1.4 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer's literature or cut sheet for each element of system including:
         1) Preparation instructions and recommendations.
         2) Installation instructions with details.
         3) Storage and handling requirements and recommendations.

B. Informational Submittals:
   1. Certificates:
      a. Installer’s signed certificate stating roofing system complies with Contract Documents performance requirements and work only performed by trained and authorized personnel in those procedures.

b. Manufacturer signed certificate that roof system has been inspected by Technical Service Representative and stating no deviation from system specified without written approval by Owner Representative and Manufacture.

2. Manufacturer Instructions:
   a. Two (2) copies of Manufacturer's published specification for Architect and maintain one (1) at job site.
3. Special Procedure Submittals:
   a. Installer to fill out 'Roof Installer Workmanship Warranty' and 'Manufacturer System Warranty' from information provided in the Attachment 'Project Design Information' from Manufacturer and from Architect. Warranties are to be included in Closeout Submittals.
4. Qualification Statement:
   a. Roofing System Manufacturer's certification of Installer.

C. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
   a. Warranty Documentation:
      1) Final, executed copy of ‘Roofing Manufacturer System Warranty’ including wind speed coverage and required Owner mandatory information.
      2) Final, executed copy of ‘Roof Installer Workmanship Warranty’ including required Owner mandatory information.
      3) Verify mandatory information as specified in Special Procedure Submittal has been included in Final Warranty.
   b. Record Documentation:
      1) Manufacturers Documentation:
         a) Certificate: Manufacturer Inspection report by Technical Service Representative.
         b) Certificate: Installer statement of compliance for performance requirements.

1.5 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Requirements:
1. Roof system will meet requirements of all federal, province, and local codes having jurisdiction (AHJ).
2. Fire Characteristics Performance Requirement:
   a. Roof system will achieve UL Class A rating when tested in accordance with ASTM E108 or ULC 102:
      1) Materials shall be identified with appropriate markings of applicable testing agency.
3. Wind Criteria as per 2018 British Columbia Building Code:
   a. Driving Rain Wind Pressure s, Pa, 1/5: _____220_____
   b. Hourly Wind Pressure kPa 1/10: _____0.44____26.1m/s__94 kph___
   c. Hourly Wind Pressure kPa 1/50: _____0.57____29.7m/s__107 kph__

B. Qualifications:
1. Requirements of Section 01 4301 applies but not limited to the following:
   a. Installers Qualifications:
      1) Provide documentation if requested by Architect:
         a) Roofing Installer shall be approved and authorized by Roofing System Manufacturer to install Manufacturer’s product and eligible to receive Manufacturer’s special warranty.
         b) Roofing Installer shall be able to document roofing membrane installation for five (5) year minimum.
         c) Roofing Installer must have current license for the city and province where project is located.
         d) Roofing Installer must have license for specific type of roofing work to be preformed.
         e) Roofing Installer’s foreman shall be skilled in his trade and qualified to lay out and supervise the Work.
         f) Membrane and flashing installation shall be performed by personnel trained and authorized by Roofing Manufacturer.

g) Welding equipment shall be provided by or approved by Roofing Manufacturer. Mechanics intending to use equipment shall have successfully completed training course provided by Manufacturer's Technical Representative before welding.

b. Roofing Membrane Manufacturer Qualifications:
1) Manufacturer that is UL listed for membrane roofing system used for this Project.
2) Manufacturer shall manufacture membrane material for five (5) consecutive years.
a) No product with documented failure will be allowed.
3) Source Limitations:
a) Provide roof components including roof insulation and fasteners for roofing system from same Manufacturer as membrane roofing or approved by Roofing Membrane Manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
1. Make no deliveries to Project until installation is about to commence, or until approved storage area is provided.
2. Deliver and maintain materials in Manufacturer's original, unopened containers or rolls, with labels intact and legible.
3. Deliver materials in sufficient quantities to allow continuity of work.
4. Remove any material not approved from job site.

B. Storage And Handling Requirements:
1. General:
a. Follow Manufacturer’s instructions and precautions for storage of materials.
b. Handle and store roofing materials and place equipment in manner to avoid permanent deflection of roof decking.
c. Material Safety Data Sheets (MSDS) must be on location always during transportation, storage and application of materials.
2. Storage Requirements:
a. Protection:
1) Protect roof materials from physical damage, moisture, soiling, and other sources in a clean, dry, protected location and with temperature range required by Manufacturer. Protect from direct sunlight.
2) Provide continuous protection of materials against moisture absorption (Manufacturer’s/Supplier’s shrink wrap is not accepted waterproofing).
b. Roof Insulation:
1) Comply with insulation Manufacturer’s written instructions for handling, storing, and protection during installation.
c. Safety:
1) Liquid materials such as solvents and adhesives shall be stored off site and installed away from open flames, sparks, and excessive heat.
2) Site storage is acceptable if liquid materials are placed in a locked, sealed storage container.
3) Situate equipment and materials to preclude danger, disturbance, or interference to public safety and traffic, and to not constitute fire hazard.
d. Temperature:
1) Store Materials, except membranes, in dry place with temperatures between 60 deg F (15.5 deg C) and 80 deg F (26.6 deg C).
2) Restore materials which can become colder than specified temperature to proper temperature before using.
e. Unacceptable Material:
1) Remove from job site materials that are determined to be damaged by Architect or by Roofing Manufacturer and replace at no additional cost to Owner.
2) Remove all wet and damaged materials from site.
3) Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
3. Handling Requirements:

a. Select and Handle operating equipment so as not to damage existing construction or new roofing system, or to overload structural system.
b. Handle rolled goods to prevent damage to edge or ends.

1.7 FIELD CONDITIONS

A. Ambient Conditions:
1. Temperature ranges shall be within tolerances allowed for material being used.
a. Roof surface shall be free of ponding water, ice, and snow.
b. Cold temperature:
1) Follow Manufacturer's written instructions for cold temperature requirements before applying membrane adhesive:
a) Follow specified precautions.
b) Expose only enough adhesive to be used as directed by membrane manufacturer:
c) Low VOC restrictions (if required by local AHJ): Temperatures to be 40 deg F (4 deg C) and rising before applying.
c. Hot temperature:
1) Do not expose membrane and accessories to constant temperature in excess of 180 deg F (82 deg C).
2. Proceed with roofing work when existing and forecasted weather conditions permit.

1.8 WARRANTY

A. Manufacturer Warranty:
1. Roofing Membrane Manufacturer’s Special Warranty for:
a. Thirty (30) year no dollar limit (NDL) material and labor covering roofing system including insulation, components of membrane roofing system, membrane degradation, and workmanship.
b. Accidental Puncture Warranty:
1) Membrane Manufacturer's written Accidental Puncture Warranty for up to sixteen (16) hours of Labor to repair punctures after final inspection.
c. Warranty shall include wind speed coverage to 90 mph (145 kph).

B. Roof Installer Workmanship Warranty:
1. Written five (5) year guarantee covering workmanship and repairs or replacement of work without cost to Owner, counter-signed by Installer and General Contractor from date of installation:
a. Roof Installer Workmanship Warranty must include information required in Attachment 'Warranty Information'.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturer:
1. Category Three Approved Manufacturers: See Section 01 6200 for definitions of Categories:
a. Carlisle SynTec Incorporated, Carlisle PA www.carlisle-syntec.com. (717) 245-7000:
1) Contact Information (USA, Canada and Global):
a) Primary Contact: Greg Petschke (Manager Strategic Accounts), office (800) 479-6832 cell (717) 215-2681 greg.petschke@carlislesyntec.com.
b. Firestone Building Products Co., Indianapolis, IN www.firestonebpco.com.
1) Contact Information (USA and Canada):
a) Primary Contact: Ben Cummins - Strategic Account Executive, office (615) 937-4869 cell (317) 402-1334 cumminsbenjamin@qbsg.net.

B. Design Criteria:
1. General:

a. Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction.
b. Membrane roofing and base flashings shall remain watertight.

2. Drainage Requirement:
   a. Roof system to provide positive drainage where all standing water dissipates within forty-eight (48) hours after precipitation ends.
3. Material Compatibility:
   a. Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane Roofing Membrane Manufacturer based on testing and field experience.
4. Metal details, fabrication practices, and installation methods shall conform to applicable requirements of following:
   a. Corner, perimeter, and field-of-roof uplift pressure.
   b. Factory Mutual Loss Prevention Data Sheet 1-49, 'Perimeter Flashing'.
   c. Follow recommendation of Sheet Metal and Air Conditioning Contractors National Association.

C. Materials:
1. Membrane:
   a. Description:
      1) Non-reinforced EPDM:
         a) Sheet Dimensions: Optimum width and length determined by project conditions.
         b) Color: Black.
      2) Fully Adhered.
      3) Carlisle "Sure Seal" or Firestone "RubberGard Platinum".
      4) Membrane thickness:
         a) 90 mil (2.286 mm) thick nominal.
      5) Membrane width and length:
         a) Optimum width and length determined by job conditions.
2. Insulation:
   a. FM or ULC approved.
   b. Polyisocyanurate Foam Insulation Board:
      1) Meet requirements of ASTM C1289, Type II, Class 2, Grade 2, with coated glass facers (non-organic) on both major surfaces. Carlisle "SecurShield" or Firestone "Resista".
      2) 1.5 inches (38 mm) thickness.
      3) Insulation boards shall be Factory Mutual Class I 90 approved.
      4) Insulation panels directly under roofing membrane and roof system cover board shall not exceed 48 inches by 48 inches (1 200 mm by 1 200 mm).
      5) Insulation shall be fully adhered with 4 inches (100 mm) o.c. adhesive ribbons at corners and in field and perimeter locations as determined by roofing Manufacturer.
3. Roof System Cover Board:
   a. Gypsum Cover Board:
      1) Over Insulation:
         a) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
            (1) 5/8 inch (16 mm) thick minimum Dens-Deck Prime by G-P Gypsum.
            (2) Cover board panels shall not exceed 48 inches by 48 inches (1 200 mm by 1 200 mm).
            (3) Cover board shall be fully adhered with 4 inches (100 mm) o.c. adhesive ribbons at corners and in field and perimeter locations as determined by roofing Manufacturer.
4. Adhesive:
   a. Fully adhered:
      1) Insulation and Cover board:
         a) FlexFAST low rise foam adhesive by Carlisle.
         b) ISO TwinPack foam adhesive by Firestone.

2.2 ACCESSORIES

A. Bonding (Flashing) Adhesive:
   1. Furnished by Membrane Manufacturer for specific application method, warranty requirements, and in compliance with all local codes and restrictions.

B. Elastomeric Flashing:
   1. Elastomeric Sheet Flashing: Uncured EPDM, 0.060 inch, 60 mil (1.5 mm) thick.

C. Prefinished Metal Flashing:
   1. Cap and Counter Flashing – see details
   2. Install to meet Manufacturer's standard details.
   3. Provide concealed 20 ga clips screwed into blocking.
   4. Install with concealed splices 6 inches (150 mm) wide typical to Manufacturer.

D. Mastic:
   1. Mastic: One component, low viscosity, self-wetting butyl mastic.
   2. Water Cut-Off Mastic.
   3. Furnished by Membrane Manufacturer.

E. Nite Seal:
   1. Compatible with materials with which it is used.
   2. Furnished by Membrane Manufacturer.

F. Sealant:
   1. General:
      a. Meet uplift and VOC requirements required, warranty requirements, and in compliance with all local codes and restrictions.
      b. As accepted by Roofing Manufacturer under specified warranty.
   2. Elastomeric Sealant:
      a. Meet requirements of ASTM C920, Type M, Grade NS, Use NT, Class 25.
   3. In-Seam Sealant:
      a. One-part sealant.
      b. Furnished by membrane manufacturer.
   4. Lap Sealant:
      a. EPDM based, trowel or gun consistency as selected by Membrane Manufacturer.

G. Seam Tape:
   1. Furnished by Membrane Manufacture

H. Splicing:
   1. Adhesive: EPDM based contact cement furnished by Membrane Manufacturer.
   2. Seam Tape: EPDM based tape furnished by Membrane Manufacturer.

I. Surface Cleaner / Primer:
   1. Furnished by Membrane Manufacturer.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Category Three Approved Manufacturer's Roofing Installers: See Section 01 4301.
   1. Carlisle SynTec:
      a. Flynn – Dave Flint, 250-652-0599, dave.flint@flynncompanies.com
      b. Parker Johnston – Rod Parker, 250-382-9181, rod.parker@parkerjohnston.com
      c. Top Line Roofing – Jack Wilson, 250-487-0500, info@toplineroofingvictoria.ca
   2. Firestone:
      a. Flynn - 250-652-0599

b. Continental - 250-714-0779
c. Alpha Roofing - 250-544-0169
d. PW McCallum Roofing - 250-884-0305
e. Proline Roofing - 250-475-1310

3.2 EXAMINATION

A. Verification Of Conditions (for reroofing over existing building):
1. Examine substrate and conditions. Verify substrate is suitable for installation of roofing system membrane before starting work of this Section.
2. Verify that roof slope allows for proper drainage before starting work of this Section.
3. Inspect for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect quality of work.
4. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at terminations.
5. Remove existing roofing, base and metal flashing, and deteriorated wood sheathing / blocking:
   a. Remove only that amount of existing roofing and flashing that can be made watertight with new materials during a one-day period or onset of inclement weather.
6. Notify Architect of unsuitable conditions in writing:
   a. Commencement of Work by installer is considered acceptance of substrate.
   b. Stop work immediately if any unusual or concealed condition is discovered and immediately notify Architect in writing, with letter copy to Roofing Manufacturer.
   c. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Protection Of In-Place Conditions:
1. Prevent interior leakage, materials falling into interior, and other such occurrences.
2. Install temporary water cut-offs at completion of each day's work and completely remove upon resumption of work.
3. Provide temporary walkways and work platforms as necessary to complete work under this Section with no damage to existing surfaces, surfaces exposed during work, and to new materials applied.
4. Coordinate application of membrane to provide protection of underlying materials from wetting or other damage by the elements on a continuous basis.
5. Sheet metal sleeves, caps, and enclosures shall be completely installed on daily basis.
6. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction.
7. Remove and discard temporary seals before beginning work on adjoining roofing.

B. Surface Preparation:
1. Remove existing roofing, base and metal flashing, and deteriorated wood sheathing / blocking. Recycle materials that can be recycled.
2. Remove only that amount of existing roofing and flashing that can be made watertight with new materials during a one-day period or onset of inclement weather.
   a. Wood Deck:
      1) Ensure decking is sound and able to provide support and attachment of new roofing assembly.
      2) Deteriorated or unsound decking that can not comply with this requirement shall be brought to attention of Architect/Owner's Representative.
      3) As directed by Architect/Owner's Representative, remove and replace sections of decking with like materials and in compliance with local code requirements.
3. Surfaces to receive new materials shall be clean, smooth, dry (free of moisture), free of flaws, sharp edges, loose and foreign material, dirt, oil and grease.
   a. Mechanically scrape exposed surfaces, if necessary to remove projections.
4. Verify that surfaces receiving new materials have no defects or errors that would result in poor application or cause latent defects in workmanship.
   a. Roofing shall not start until defects have been corrected.

5. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast.
6. Reset or replace existing fasteners that are loose, deformed, damaged, or corroded.
7. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 INSTALLATION

A. Interface With Other Work:
1. Coordinate with Installers whose work penetrates roof deck or requires men and equipment to traverse roof deck.
2. Coordinate with Asphalt Roofing installation.
3. Coordinate prefinished metal flashing from Asphalt shingles over EPDM and from EPDM over Asphalt shingles at transition areas to isolate the EPDM from Asphalt shingles.

B. General:
1. Installation shall be in conformance with latest edition of Manufacturer's specification except where Contract Documents are more restrictive.

C. Insulation:
1. Position first layer of insulation board with tight joints and staggered edges.
   a. Lay out drainage board to provide positive flow to roof drains as shown on Contract Drawings.
   b. Fully adhere roof insulation assembly over plywood roof deck with 4 inches (100 mm) o.c. adhesive ribbons in pattern as directed by Membrane Manufacturer.
   c. Moisten content of insulation shall not exceed four (4) percent.
2. Over dry polyisocyanurate insulation installation, install cap layer of roof system cover board with adhesive securement as directed by Membrane Manufacturer.

D. Roof System Cover Board:
1. Offset roof system cover board joints 24 inches (610 mm) minimum from joints in underlying substrate or insulation.
2. Fully adhere roof system cover board over insulation with 4 inches (100 mm) o.c adhesive ribbons in pattern as required by Roofing Membrane Manufacturer’s warranty requirements.

E. Membrane Placing:
1. Position membrane over substrate without stretching.
2. Allow membrane to relax approximately one-half hour prior to splicing and flashing.
3. Fold sheet back so one half of underside of sheet is exposed. Sheet fold shall be smooth, no wrinkles or buckles.
4. Install separation sheet over insulation that needs protection from solvents.
5. Apply bonding adhesive evenly to one half of underside of membrane and to substrate as recommended by Membrane Manufacturer. Apply so bonding adhesive on both surfaces dries simultaneously. Allow to dry until tacky.
6. Standing at fold, roll membrane slowly onto coated substrate without causing wrinkles.
7. Press bonded sheet to substrate with stiff broom.
8. Fold uncoated half of membrane back and repeat steps 5 through 7 above.

F. Membrane Splicing:
1. Fold top sheet back about 12 inches (300 mm). Apply seam primer to both mating surfaces at splice areas. Allow primer to cure.
2. Remove seam tape backing and apply to seam area. Roll to achieve satisfactory bond.
3. Remove release backing from top side of seam tape and allow membrane to fall freely onto seam tape.
4. Using positive pressure, roll splice with 2 inch (50 mm) wide steel roller toward outer edge of splice.
5. At 'T' joints, install as required by membrane manufacturer for specific warranty coverage.

G. Perimeter Securement:

1. Install reinforcement security strips at perimeter of each roof level, curb, flashing, expansion joint, drip edge, and as required by Manufacturer.
2. Fully adhered as required by Manufacturer.

H. Flashing:
1. Parapet and curb flashing shall be continuation of field membrane adhered to security strip and substrate with membrane flashing used to counter seal terminated field membrane.
   a. Clean surface of EPDM in splice area with surface cleaner, using clean rags.
   b. Apply bonding adhesive to both flashing and surface to which it is being bonded as required to achieve full bond.
   c. After bonding adhesive has dried to point where it does not string or stick to dry finger, roll flashing into adhesive. Assure that flashing does not bridge where there are changes of direction, for example, where parapet meets roof deck.
2. Metal Edge Flashing:
   a. Install as per requirements of ANSI/SPRI ES-1, 'Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems'.
   b. Install to meet Manufacturer’s standard details with concealed hold down clips.
   c. Install with concealed splices 6 inches (150 mm) wide typical to Manufacturer.

I. Daily Seal:
1. Exercise care to ensure that water does not flow beneath completed sections of roof. Temporarily seal loose edge of membrane daily and when weather is threatening.
   a. Mix two components thoroughly according to instructions on label.
   b. Apply at rate of 100 lineal feet per gallon (6 750 mm / L) to smooth surfaces, and 12 inches (300 mm) from edge of membrane onto exposed substrate. If necessary, use trowel to spread material to achieve complete seal.
   c. After embedding membrane, check for continuous contact. Weight edge to provide continuous pressure over length of cut-off.
   d. Pull sheet free before continuing installation.

3.5 FIELD QUALITY CONTROL

A. Field Inspections:
1. Before Manufacturer's inspection for warranty, Installer must perform pre-inspection to review work and to verify flashing has been completed as well as application of caulking.
2. Final Roof Inspection:
   a. Arrange for Roofing Membrane Manufacturer's technical personnel to inspect roofing installation on completion.
3. Upon completion of roof inspection, provide certification that installation has been performed in accordance with Contract Document and Roofing Manufacturer requirements.

B. Non-Conforming Work:
1. Correct all work not in compliance to Contract Documents at no additional cost to Owner.
   a. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
   b. Replace contaminated membrane.
2. Additional inspections will be performed to determine compliance of replaced or additional work with specified requirements at no additional cost to Owner.
3. Repair landscaped areas damaged by construction activities at no additional cost to Owner.

3.6 CLEANING

A. General:
1. Remove roofing materials from surfaces not specified to receive these materials such as walls, walkways, metal flashings, etc.
2. Repair existing grass areas, plantings, and other site improvements that are damaged or altered during performance of roofing work.

3. Remove scraps, equipment, debris, and foreign materials from roof and grounds at completion of the Work.

B. Waste Management:
1. Perform daily clean-up to collect wrappings, empty containers, paper, and other debris from project site.
2. Upon completion, roofing waste materials must be disposed from site to dumping area legally authorized to receive such materials.
3. Complete site cleanup, including both interior and exterior building areas that have been affected by construction, to Owner's satisfaction.

3.7 PROTECTION

A. General Contractor Responsibility:
1. Protection of roofing membrane from damage and wear from other trades from damage after completion of roof membrane.
2. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by Manufacturer of affected construction.

END OF SECTION

ATTACHMENTS

ARCHITECT'S INFORMATION FOR ROOFING MANUFACTURERS

PROJECT INFORMATION GIVEN TO ROOFING MANUFACTURER BY ARCHITECT

Project Name:	____Victoria 2, 3 Roof_____
Project Site Address:	____701 Mann Avenue, Victoria, BC_____
Building Type (Meetinghouse, CES, O&M/R&I, Temple, Other)	____Meetinghouse
Roof Deck (Plywood Sheathing)	____5/8" roof sheathing___
Architect to provide Digital Information to assist Roof Manufacture:	Specification Section 07 5323 Roof Plan

ROOFING MANUFACTURER CONTACT INFORMATION

Carlisle SynTec

Primary Contact:	Greg Petschke Strategic Account Manager Cell (717) 215-2681, Office (717) 245-7000 Greg.Petschke@CarlisleSynTec.com

Firestone

Primary Contact:	Ben Cummins Strategic Accounts Manager Office (615) 937-4869 Cell (317) 402-1334 cumminsbenjamin@qbsg.net.

PROJECT INFORMATION for ROOF WARRANTY

Architect to provide following information to Roof Installer after BID to be included in 'Roof Installer Workmanship Warranty' and 'Manufacturer System Warranty' as part of the Closeout Submittal.

Name of Owner (FM Group):	_____Vancouver BC West FM Group___
Mailing Address (FM Office Address)	_____20030 82 Avenue, Langley, BC, V2Y 2A8_____
Property ID (Property No.)	_____515-5169__
Site Address (Project Site Address)	_____701 Mann Avenue, Victoria, BC____

Roof Completion Date (Substantial Performance date available after BID to be included in Roof Warranty)

SECTION 07 6210

GALVANIZED STEEL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install miscellaneous flashing, head flashing, reglet, cap and counterflashing, including concealed hold-down clips as described in Contract Documents and not specified to be of other material.

B. Products Furnished But Not Installed Under This Section:
   1. Miscellaneous sheet metal specialties not specified to be of other materials.

C. Related Requirements:
   1. Section 06 1100: 'Wood Framing' for wood base / curb.
   2. Section 07 3113: 'Asphalt Roofing' for installation miscellaneous roofing related flashing.
   3. Section 07 5323: 'EPDM Roofing' for installation miscellaneous roofing related flashing.
   4. Section 07 9213: 'Elastomeric Joint Sealant'.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      a. ASTM A653/A653M-18, ‘Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
      b. ASTM A792/A792M-10(2015), ‘Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
   2. Federal Specifications:
      a. TT-S-00230C(2) Sealing Compound, Elastomeric Type, Single Component, (For Caulking, Sealing, and Glazing in Buildings and Other Structures).

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:
   1. Type Two Acceptable Manufacturers Of Metal:
      a. Cascadia Metals, www.cmetals.com
      b. CMG – Coated Metals Group, Denver, CO www.cmgmetals.com.
      c. Drexel Metals, LLC, Ivyland, PA www.drexmet.com.
      d. Fabral, Lancaster, PA www.fabral.com.
      e. Firestone Metal Producdts, Anoka, MN www.unaclad.com.
      f. Metal Sales Manufacturing Corp, Sellersburg, IN www.mtlsales.com.
      g. Petersen Aluminum Corp, Elk Grove, IL www.pac-clad.com.
      h. Ryerson, Chicago, IL www.ryerson.com.
      i. Equal as approved by Architect before installation. See Section 01 6200.

B. Materials:
   1. Sheet Metal:
      a. Galvanized iron or steel meeting requirements of ASTM A653/A653M, G 90 or Galvalume steel meeting requirements of ASTM A792/A792M AZ50, 50 ksi.

1) 24 ga (0.635 mm) for all flashing.
2) 20 ga for all hold down clips.

C. Fabrication:
1. Form accurately to details.
2. Profiles, bends, and intersections shall be even and true to line.
3. Fold exposed edges 1/2 inch (12.7 mm) to provide stiffness.

D. Finish:
1. Exposed to view:
a. Provide face coating of polyvinyledene Fluoride (PVF_2) Resin-base finish (Kynar 500 or Hylar 5000) containing seventy (70) percent minimum PVF_2 in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
b. Reverse side coating shall be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
2. Color to match Cascadia Metals “Weathered Copper”.

2.2 ACCESSORIES

A. Sealants: Rubber base type conforming to Fed Spec TT-S-00230C.

B. Fasteners:
1. Of strength and type consistent with function.
2. Nails: Hot-dipped galvanized.
3. Screws, Bolts, And Accessory Fasteners: Galvanized or other acceptable corrosion resistant treatment. See Drawings.
4. Colour matched to flashing.

C. Step Flashing:
1. Step flashing required for steep slope for roof to wall flashing.
a. 24 ga (0.635 mm) galvanized iron or steel meeting requirements for sheet metal specified in materials above.
b. Size: 5 inch (125 mm) x 5 inch (125 mm) by 8 inch (200 mm) or 12 inches (300 mm) length.

D. Prefinished Metal Cap Flashing:
1. Provide concealed 20 ga clips screwed into blocking to secure flashing.
2. Install with concealed splices 6 inches (150 mm) wide typical to Manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install with small, watertight seams.

B. Slope to provide positive drainage.

C. Provide sufficient securement and hold down clips to ensure true alignment and security against wind.

D. Provide 4 inch (100 mm) minimum overlap.

E. Allow sufficient tolerance for expansion and contraction.

F. Insulate work to prevent electrolytic action.

3.2 CLEANING

A. Leave metals clean and free of defects, stains, and damaged finish.

END OF SECTION

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SECTION 07 6310

STEEP SLOPE ROOF FLASHING: Asphalt Shingles

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Roof flashing including:
      a. Formed Valley Metal.
      b. Drip and Rake edge.
      c. Pipe flashing for vent piping.
      d. Roof jacks.
      e. Miscellaneous flashing.

B. Related Requirements:
   1. Section 07 3113: 'Asphalt Shingles' for installation.
   2. Section 07 9213: 'Elastomeric Joint Sealants' for quality of sealants.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      a. ASTM A653/A653M-18, ‘Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
      b. ASTM A792/A792M-10(2015), ‘Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
   2. ASTM International: (specifically referenced for pipe flashing only):
      a. ASTM B117-18, 'Standard Practice for Operating Salt Spray (Fog) Apparatus'.
      b. ASTM E283-04(2012), ‘Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen’.
      c. ASTM E330/E330M-14, ‘Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference’.
      d. ASTM E331-00(2016), ‘Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference’.
      e. ASTM E2140-01(2017), ‘Standard Practice for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head’.

1.3 WARRANTY

A. Pipe Flashing:
   1. Manufacturer's warranty against defects in materials and workmanship when correctly installed in appropriate application for life of original roofing material from installation or replacement or fifty (50) years whichever is greater.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturers:
   1. Type Two Acceptable Manufacturers:

a. Cascadia Metals, www.cmetals.com
b. CMG – Coated Metals Group, Denver, CO www.cmgmetals.com.
c. Drexel Metals, LLC, Ivyland, PA www.drexmet.com.
d. Fabral, Lancaster, PA www.fabral.com.
e. Firestone Metal Products, Anoka, MN www.unaclad.com.
f. Metal Sales Manufacturing Corp, Sellersburg, IN www.mtlsales.com.
g. Petersen Aluminum Corp, Elk Grove, IL www.pac-clad.com.
h. Ryerson, Chicago, IL www.ryerson.com.
i. Equal as approved by Architect before installation. See Section 01 6200.

B. Formed Valley Metal And Drip/ Rake Edge:
1. Metal:
a. Steel: Minimum 24 ga (0.635 mm), hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz/sq ft. or galvalume meeting requirements of ASTM A792/A792M AZ50, 50 ksi.

C. Fabrication – see details:
1. Valley-ribbed flashing:
a. Form accurately to details. Provide formed valley metal in 10 foot (3 meter) lengths with one inch (25 mm) 'V' crimp and break in center to match roof slopes.
2. Profiles, bends, and intersections shall be even and true to line.

D. Finishes:
1. Face coating polyvinyledene Fluoride (PVF_2) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing seventy (70) percent minimum PVF_2 in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
2. Reverse side coating of steel flashings to be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
3. Color to match Cascadia Metals “Weathered Copper”.

2.2 ACCESSORIES

A. Pipe Flashing For ABS Plumbing Vent Lines:
1. Description:
a. Ultra-pure high consistency molded one hundred (100) percent silicone rubber pipe boot that prevents cracking and splitting for life of roof.
2. Design Criteria:
a. Meet following Tests:
1) ASTM B117 (Salt Spray Test).
2) ASTM E283 (Air Leakage).
3) ASTM E 330 (Uniform Structural Load).
4) ASTM E331 (Water Penetration).
5) ASTM E2140 (Water).
b. Material warranty of product for life of roof.
3. 24 ga (0.635 mm) coated galvanized steel plate.
4. Minimum 4 inch (100 mm) flashing on each side, 6 inch (150 mm) flashing at top, 3 inch (76 mm) flashing at bottom with nailing slots.
5. UV stable solid molded PVC compression collar.
6. Use Ultimate Pipe Flashing for PVC, ABS and IP.
7. Sizes: 1-1/4 inch (32 mm), 1-1/2 inch (38 mm), 2 inch (50 mm), 3 inch (76 mm), and 4 inch (100 mm).
8. Slope: Flat to 18/12 pitch.
9. Flashing Finish: Face coating polyvinyledene Fluoride (PVF_2) Resin-base finish (Kynar 500) for coil coating components containing seventy (70) percent minimum PVF_2 in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
10. Color: Brown (no other color available).
11. Approved System Manufacturers. See Section 01 6200 for definitions of Categories:

a. Ultimate Pipe Flashing by Lifetime Tool & Building Products LLC, Winchester, VA www.lifetimetool.com (877) 904-1002.
b. Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Interface With Other Work:
1. Coordinate with existing pipe and penetrations for proper size of roof jacks and pipe flashing.

B. Pipe Flashing:
1. Follow Manufacturer's installation instructions.

END OF SECTION

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SECTION 07 6312

PERFORATED METAL SOFFIT

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install perforated metal soffit system as described in Contract Documents.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      a. ASTM A653/A653M-18, ‘Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
      b. ASTM A792/A792M-10(2015), ‘Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
      c. ASTM E84-18b, ‘Standard Test Method for Surface Burning Characteristics of Building Materials’.

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer's literature or cut sheet for products furnished.

B. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Warranty Documentation:
         1) Final, executed copy of Warranty.

1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Fire Characteristics Performance Requirement:
      a. Meet requirements of ASTM E84 Class A fire rating.

B. Qualifications:
   1. Installer:
      a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Materials shall be delivered in original, unopened packages with labels intact.
   2. Inspect delivered material for damage.

B. Storage And Handling Requirements:
   1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.

2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

1.6 WARRANTY

A. Manufacturer Warranty:
   1. Manufacturer's written 20-year guarantee for finish.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Manufacturers
   1. Type One Acceptable Manufacturers:
      a. Alcoa Architectural Products, Eastman, GA www.alcoaarchitecturalproducts.com.
      b. Alside Inc, Cuyahoga Falls, OH www.alside.com.
      c. ATAS Aluminum Products, Allentown, PA www.atas.com.
      d. Gentek Building Products, Akron, OH and Burlington, ON www.gentekinc.com.
      e. Kaycan Ltd, Montreal, QB www.kaycan.com.
      f. Norandex/Reynolds, Macedonia, OH www.norandexreynolds.com.
      g. Petersen Aluminum Corp, Elk Grove, IL www.pac-clad.com.
      h. System 3-12L by Rollex, Elk Grove Village, IL www.rollex.com.
      i. Equal as approved by Architect before bidding. See Section 01 6200.

B. Performance Requirements:
   1. Capacities: Installed soffit system shall meet minimum required structural loading conditions.

C. Materials:
   1. 0.019 inch (0.48 mm) thick minimum.
   2. 'V' groove design complete with matching trim.
   3. Panels shall be interlocked full length of panel.
   4. Panel widths shall be Manufacturer’s standard.
   5. Perforations to conform to CMHC requirements having 3.375 sq inches (2.17 cm^2) of ventilation per square foot (square meter) of soffit area.

D. Finish:
   1. Double baked enamel with protective coating on back side.
   2. Color to match Kaycan “Wolf White” from Manufacturer's standard colors – submit sample.

2.2 ASSESSORIES

A. Fastening Devices:
   1. Non-corrosive screws of length and type recommended by Soffit Manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine substrate and verify framing is suitable for installation of soffit system.
   2. Notify Architect of unsuitable conditions in writing.
      a. Do not install soffit over unsuitable conditions.
      b. Commencement of Work by installer is considered acceptance of substrate.

3.2 INSTALLATION

A. Conceal fasteners where possible. Paint heads of exposed fasteners to match background.

B. Isolate from dissimilar metals to prevent electrolytic action.

C. Coordinate with framing and new 2x blocking into framed soffit areas for additional securement locations.

3.3 FIELD QUALITY CONTROL

A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
   1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

3.4 CLEANING

A. General:
   1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.

B. Waste Management:
   1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

END OF SECTION

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SECTION 07 6322

STEEL FASCIA

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install metal fascia as described in Contract Documents.
   2. See details in Drawings for pre-finished metal “L” trim against the building profile.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      a. ASTM A653/A653M-18, ‘Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
      b. ASTM A792/A792M-10(2015), ‘Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
      c. ASTM E84-18b, ‘Standard Test Method for Surface Burning Characteristics of Building Materials’.

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer's literature or cut sheet for products furnished.

B. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Warranty Documentation:
         1) Final, executed copy of Warranty.

1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Fire Characteristics Performance Requirement:
      a. Meet requirements of ASTM E84 Class A fire rating.

B. Qualifications:
   1. Installer:
      a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Materials shall be delivered in original, unopened packages with labels intact.
   2. Inspect delivered material for damage.

B. Storage And Handling Requirements:

1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.
2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

1.6 WARRANTY

A. Manufacturer Warranty:
   1. Manufacturer's standard warranty against manufacturer defects.
   2. Manufacturer's written thirty five (35) year warranty on paint finish against cracking, peeling, blistering, chalk, and color change.

PART 2 - PRODUCTS

2.1 ASSEMBLIES

A. Manufacturers:
   1. Type One Acceptable Manufacturers Of Metal:
      a. AEP / Span, Dallas, TX www.aep-span.com.
      b. ATAS Aluminum Products, Allentown, PA www.atas.com.
      c. Cascadia Metals, www.cmetals.com
      d. CMG – Coated Metals Group, Denver, CO www.cmgmetals.com.
      e. Drexel Metals, LLC, Ivyland, PA www.drexmet.com.
      f. Fabral, Lancaster, PA www.fabral.com.
      g. Firestone Metal Products, Anoka, MN www.unaclad.com.
      h. Hunter-Douglas Canada Ltd, Brampton, ON www.hunterdouglasgroup.com.
      i. Kaycan Ltd, Montreal, PQ (514) 334-7550 www.kaycan.com.
      j. MBCI, Houston, TX www.mbci.com.
      k. Metal Sales Manufacturing Corp, Sellersburg, IN www.mtlsales.com.
      l. Petersen Aluminum Corp, Elk Grove, IL www.pac-clad.com
      m. Ryerson, Chicago, IL www.ryerson.com.
      n. VicWest, Oakville, ON www.vicwest.ca
      o. Equal as approved by Architect before bidding. See Section 01 6200.

B. Materials: Minimum 24 ga (0.635 mm), hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz/sq ft or galvalume meeting requirements of ASTM A792/A792M AZ50, 50 ksi and complete with accessories recommended by Manufacturer for proper installation.

C. Fabrication: Fascia may either be shop-fabricated using metal from a specified manufacturer, or a factory-fabricated standard system from a specified manufacturer.

D. Finishes:
   1. Face coating polyvinyledene Fluoride (PVF_2) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing 70 percent minimum PVF_2 in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
   2. Reverse side coating thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
   3. Color to match Cascadia Metals “Weathered Copper”.

2.2 ACCESSORIES

A. Fastening Devices: Galvanized steel screws.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine substrate and verify framing is suitable for installation of fascia.
   2. Notify Architect of unsuitable conditions in writing.
      a. Do not install fascia over unsuitable conditions.
      b. Commencement of Work by installer is considered acceptance of substrate.

3.2 INSTALLATION

A. Conceal fasteners except where details might require a minimum number to be exposed. Colour match heads of exposed fasteners to match background.

B. Install with slip joints at each end. Screw to substrate through pre-drilled, over-size holes.

C. Isolate from dissimilar metals not part of fascia system to prevent electrolytic action.

D. Install pre-finished metal “L” trim against the building profile including masonry jogs prior to new soffit J trim.

3.3 FIELD QUALITY CONTROL

A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
   1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

3.4 CLEANING

A. General:
   1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.

B. Waste Management:
   1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

END OF SECTION

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SECTION 07 7123

MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install gutters and downspouts as described in Contract Documents.

B. Related Requirements:
   1. Section 07 9213: 'Elastomeric Joint Sealant', for quality of sealants for joints.

1.2 REFERENCES

A. Reference Standard:
   1. Sheet Metal & Air Conditioning Contractors National Association Inc:
      a. SMACNA Architectural Sheet Metal Manual, (7th edition 2012).

1.3 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings: Show gutter cross-section, mounting method, gauge of metal, expansion joint design and locations, and downspout locations minimum.

PART 2 - PRODUCTS

2.1 ASSEMBLIES

A. Manufacturers:
   1. Type Two Acceptable Manufacturers of Metal:
      a. ATAS Aluminum Products, Allentown, PA www.atas.com.
      b. Cascadia Metals, www.cmetals.com
      c. CMG – Coated Metals Group, Denver, CO www.cmgmetals.com.
      d. Fabral, Jackson, GA www.fabral.com.
      e. Firestone Metal Products, Anoka, MN www.unaclad.com.
      f. MBCI, Houston, TX www.mbci.com.
      g. Metal Sales Manufacturing Corp, Sellersburg, IN www.mtlsales.com.
      h. Petersen Aluminum Corp, Elk Grove, IL www.pac-clad.com.
      i. Reynolds Metals Company, Richmond, VA www.rmc.com.
      j. Ryerson, Chicago, IL www.ryerson.com.
      k. Equal as approved by Architect before installation. See Section 01 6200.

B. Materials
   1. Steel:
      a. Downspouts: Rectangular, 26 ga (0.0217 inches - 0.5512 mm) galvanized steel including necessary elbows.
      b. Gutters: 24 ga (0.0276 inches - 0.7010 mm) galvanized steel.
      c. Brackets: 22 ga (0.0336 inches - 0.8534 mm) galvanized steel or 26 ga (0.0217 inches - 0.478 mm) double-hemmed minimum.
   2. Screws, Bolts, And Accessory Fasteners: Non-corrosive and of strength and type consistent with function.

3. Downspouts, gutters, brackets, fasteners, and accessories shall be compatible material.

C. Fabrication:
1. Fabricate in accordance with SMACNA Architectural Manual recommendations, where applicable.
2. Cross-sectional configuration of gutter shall be 6 inches (152 mm) "K" style, (Page 1.13 6th Edition) of SMACNA Architectural Manual.
3. Form accurately to details. Profiles, bends, and intersections shall be even and true to line.

D. Finishes:
1. Metal exposed to view shall have face coating of polyvinyledene Fluoride (PVF_2) Resin-base finish (Kynar 500 or Hylar 5000) containing seventy (70) percent minimum PVF_2 in resin portion of formula.
   a. Thermo-cured two (2) coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
   b. Reverse side coating shall be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
2. Color to match Cascadia Metals “Weathered Copper”.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection Of In-Place Conditions:
1. Before starting work, verify governing dimensions at building. Inspect for conditions that would prevent installation of specified system. Do not install over improper conditions.
2. Insulate work from fascia as necessary to prevent electrolytic action.

3.2 INSTALLATION

A. Allow no more than 40 feet (12 meters) between downspouts. Lap joints in downspouts 1-1/2 inches (38 mm) minimum in direction of water flow. See Roof plan for downspout locations.

B. Furnish and install outlet tubes and gutter ends where required. Furnish and install expansion joints in runs exceeding 50 feet (15 meters) and in runs that are restrained at both ends. Lap other joints in gutter one inch (25 mm) minimum, apply sealant in lap, and stainless steel rivet one inch (25 mm) on center maximum. Provide expansion joints to SMACNA standards with spacer dimension between eavestroughs and install matching profile surround flashing over eavestrough fastened to one side to allow for movement.

C. See details in Drawings for protection guard at vertical section of rain water leaders.

3.3 FIELD QUALITY CONTROL

A. Field Tests:
1. At completion of this work, block downspouts and flood gutters.
2. Repair leaks and adjust for proper drainage.

3.4 CLEANING

A. Leave metals clean and free of defects, stains, and damaged finish.

END OF SECTION

SECTION 07 7226

RIDGE VENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish ridge vent system and installed under other Sections as described in Contract Documents.

B. Related Requirements:
   1. Section 07 3113: 'Asphalt Shingles' for ridge vent installed over Asphalt Shingle roofing.
   2. Section 07 9213: ‘Elastomeric Joint Sealants’.

1.2 REFERENCES

A. Definitions:
   1. Net Free Area (NFA): Total unobstructed area (adjusted for insect screen, louvers and weather coverings) through which air can pass through a vent; generally measured in square inches. All non-powered vents have a Net Free Area rating.

B. Reference Standards:
   1. ASTM International:
      a. ASTM A653/A653M-18, ‘Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
      b. ASTM A792/A792M-10(2015), ‘Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
      c. ASTM C920-18, ‘Standard Specification for Elastomeric Joint Sealants’.
   2. International Building Code (IBC) (2018 or latest adopted edition):
      a. Chapter 12, 'Interior Environment':
         1) Section 1203, 'Ventilation':
            a) 1203.2, ‘Attic Spaces’.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference:
   1. Participate in pre-installation conference held jointly with Section 07 3113.
   2. In addition to agenda items specified in Section 01 3100, review following:
      a. Review if Project is in high wind area.
      b. Review Ridge Vent Manufacturers ventilation cutout requirements on roof deck and location of ventilation cutouts shown on Contract Documents.

B. Sequencing:
   1. Coordinate installation with roof membrane.
   2. Installation of ridge vent system.

1.4 SUBMITTALS

A. Informational Submittals:
   1. Manufacturer Instructions:
      a. Design details.
      b. Published ridge vent installation instructions.

c. Storage and handling requirements.

B. Informational Submittals:
1. Certificates:
a. Manufacturer's Certificates of compliance showing products meet or exceed specified requirements.
2. Tests And Evaluation Reports:
a. Manufacturer's test reports.
b. Wind speed coverage for warranted wind speed.
3. Special Procedure Submittals:
a. Contact Owner’s Representative (FM Group or Project Manager) for following information:
1) Installer to include following mandatory information for Warranty Information to be given to Ridge Vent Manufacturer to be added to Manufacturer Warranty included with Closing Submittals:
a) Name of Owner (name of FM Group): Vancouver BC West FM Group
b) Mailing Address (FM office address): 20030 82 Avenue, Langley, BC, V2Y 2A8
c) Property ID: 515-5169
d) Site address: 701 Mann Avenue, Victoria, BC
e) Installation of Ridge Vent (or Roof Completion) Date: _____
f) Any addition data required from Ridge Vent Manufacturer.

C. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
a. Warranty Documentation:
1) Final, executed copy of Warranty including Installer project information.

1.5 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
1. Wind Speed:
a. As required to meet local codes having jurisdiction.

B. Qualifications:
1. Manufacturer:
a. Company specializing in manufacturing products specified with this section with at least five (5) years experience and no known failures of specified product manufactured.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
1. Deliver products job site in original unopened containers or wrappings.
2. Deliver materials in sufficient quantities to allow continuity of work.

B. Storage And Handling Requirements:
1. Storage Requirements:
a. Follow Manufacturer’s instructions and precautions for storage of materials.
b. Protect materials from physical damage in a clean, dry, well vented, and protected location.
2. Handling Requirements:
a. Handle material so as to prevent damage.

1.7 WARRANTY

A. Manufacturer Warranty:
1. General:
a. Ridge vent system will provide calculated net free area (NFA) stated design.
b. Warranty starts at completion of installation.

c. Warranty covers replacement cost excluding labor and any costs involved with repairing or replacing other roofing or building materials.

2. Manufacturer's thirty (30) year warranty covering:
   a. Kynar 500 paint and finish warranty covering color fade, chalk, and film integrity for ridge vent system.
3. Manufacturer's twenty (20) year warranty covering:
   a. Ridge vent system to be free from defects that will affect its performance.
   b. Ridge vent system will withstand winds up to 120 mph (193 kph) average wind speed.
   c. Ridge vent system will withstand snow load.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:
   1. Category Three Manufacturers And Products. See Section 01 6200 for definitions of Categories:
      a. Metal-Era Airflow Solutions, Waukesha, WI www.metalera.com.
         1) Contact Information: Alissa Kuether-Bonlender (800) 558-2162 thechurch@metalera.com.
      b. Western Metal Products, LC, Woods Cross, UT www.westernmetalproducts.com.
         1) Contact Information: James Rohletter, phone (888) 298-3454, email rvbid@westernmetalproducts.com.

B. Materials:
   1. Description / Design Criteria:
      a. Ridge Vent:
         1) Basis of Design:
            a) Basis of Design Approved Product:
               (1) HI-PERF High Velocity Ridge Vent by Metal-Era.
            b) Basis of Design Approved Equivalent Product:
               (1) Ridge Vent by Western Metal.
         2) Design Criteria:
            a) Not approved on roof mean heights greater than 33 feet (10 m).
            b) Weather-proof and bug-proof ventilation system.
            c) Withstand winds up to 120 mph (193 kph) average wind speed.
            d) Provide net free area (NFA) requirements as determined by vented roof deck system and eave condition as indicated on Contract Drawings.
         3) Slope to Slope Version:
            a) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
               (1) Model HPSS by Metal-Era.
               (2) Model: ASRP2 by Western Metal.
         4) Net free area (NFA):
            a) Net free area: 33 sq. in. (213 sq cm) per lineal foot (305 mm).
   2. Components:
      a. Category Four Approved Product:
         1) Basis of design for System Components for this Project is Metal-Era Ridge Vent.
         2) Basis of design approved equivalent system components for this Project is Western Metal.
      b. Ridge vent system comprising of following:
         1) Cover plate 8 inch (200 mm) wide at each joint over ridge vent cover.
         2) Continuous deflector with baffle.
         3) Continuous Z bracket with intermittent spacer at 12 inch (305 mm) on center to supporting ridge cover.
         4) End cap / cover plate.
         5) Expanded metal support screen.
         6) Fasteners.
         7) Intermittent spacers at 12 inch (305 mm) on center directly under ridge vent cover.

8) Ridge vent cover in 12 feet (3.657 m) length.

c. Metal:
1) 24 ga (0.0276 in) (0.7010 mm) minimum hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz per sq ft (381.5 g per sq m) or galvalume meeting requirements of ASTM A792/A792M AZ50.

d. Expanded metal support screen:
1) 0.050 inch (1.27 mm) 3003-H14 formed aluminum with minimum of 48 percent open area.

e. Z brackets: 20 gauge (0.0396 in) (1.0058 mm) G90 galvanized steel.

f. Deflector: 24 ga (0.0276 in) (0.7010 mm) minimum.

C. Finishes:
1. Ridge vent and accessories:
a. Polyvinylidene Fluoride (PV_2) Resin-base finish (Kynar 500) for coil coating components containing seventy (70) percent minimum PVF_2 in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
b. Approved Color: Medium Bronze.

2.2 ACCESSORIES

A. Ridge Vent System:
1. End Caps, Cover Plates, and other accessories necessary for proper installation.

B. Fasteners:
1. Ridge vent fastened to structure:
a. Category Four Approved Fasteners:
1) Basis of design: Metal-Era Ridge Vent.
2) Basis of design approved equivalent: Western Metal.
b. Fasteners shall be approved by Ridge Vent Manufacturer and provide minimum pull out resistance of 240 lbf (109 kg) into substrate when tested in accordance with TAS 105 test protocol:
1) Screws:
a) #9 1-1/2 inches (38 mm) stainless steel screws.
b) Provided by Manufacturer.
c. No nailing permitted.

C. Sealant:
1. Description:
a. Weathersealing expansion, contraction, perimeter, and other movement joint sealant.
2. Design Criteria:
a. As specified in Section 07 9213 'Elastomeric Joint Sealants'.
b. Meet following standards for Sealant:
1) ASTM C920: Type S Grade NS, Class 25 (min) Use O.
2) 100 percent silicone.
3. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
a. Dow Corning: 790 Silicone Building Sealant.
b. Momentive Performance Materials (formerly, GE Sealants & Adhesives): GE SCS2350 Silicone Elastomeric Sealant.
c. Tremco: Tremsil 600 Silicone Sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:

1. Verify Ridge Vent Manufacturers ventilation cutout requirements on roof deck and location of ventilation cutouts shown on Contract Documents to verify correct location for all cutouts.
   a. Make adjustments to ventilation cutouts if necessary before installation of ridge vent.
2. Examine deck to determine if it is satisfactory for installation of ridge vent system.
   a. Conditions include, but are not limited to, moisture on deck and protruding deck fasteners.
   b. Verify substrate is dry, clean and free of foreign matter.
3. Do not begin installation until substrates have been properly prepared.

3.2 PREPARATION

A. Surface Preparation:
   1. Clean roof sheathing, including removal of dirt, shingle nails, and debris, before installation of ridge vent system.

3.3 INSTALLATION

A. Ridge Vent:
   1. Install in accordance with IBC Section 1503.2 'Flashing'.
   2. Install in accordance and as shown with Manufacturer's installation instructions for assembly of components and attachment to roof deck:
   3. Use provided fasteners consistent with manufacturer's instructions, suitable for substrate to which it is being installed.
   4. Attach to roof/wall structure with stainless steel screws provided by Manufacturer at spacing required by Manufacturer. All nail heads and vent section joints shall be sealed with silicone sealant.
   5. Remove protective film before applying sealant.
   6. Apply sealants as per Manufacturer's installation instructions.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Performance.

3.5 CLEANING

A. General:
   1. Properly clean finished roof surface after completion.

B. Waste Management:
   1. Disposal:
      a. General:
         1) Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current AHJ regulations and local laws.

END OF SECTION

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SECTION 07 9213

ELASTOMERIC JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
1. Furnish and install sealants not specified to be furnished and installed under other Sections.
2. Quality of sealants to be used on Project not specified elsewhere, including submittal, material, and installation requirements.

B. Related Requirements:
1. Furnishing and installing of sealants is specified in Sections specifying work to receive new sealants.

1.2 REFERENCES

A. Definitions:
1. Sealant Types and Classifications:
a. ASTM Specifications:
1) Type:
a) Type S: Single-component sealant.
b) Type M: Multi-component sealant.
2) Grade:
a) Grade NS: Non-sag or gunnable sealant used for vertical and non-traffic joints.
3) Classes: Represent movement capability in percent of joint width.
a) Class 100/50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand of at least 100 percent increase and decrease of at least 50 percent of joint width as measured at time of application.
b) Class 50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 50 percent of joint width as measured at time of application.
c) Class 25: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 25 percent of joint width as measured at time of application.
d) Class 12: Sealant that, when tested for adhesion and cohesion under cyclic movement shall withstand increase and decrease of at least 12 percent of joint width as measured at time of application.
4) Use:
a) NT (Non-Traffic): Sealant designed for use in joints in non-traffic areas.
b) I (Immersion): Sealant that meets bond requirements when tested by immersion (Immersion rated sealant applications require primer).
c) M (Mortar): Sealant that meets bond requirements when tested on mortar specimens.
d) G (Glass): Sealant that meets bond requirements when tested on glass specimens.
e) A (Aluminum): Sealant that meets bond requirements when tested on aluminum specimens.
f) O (Other): Sealant that meets bond requirements when tested on substrates other than standard substrates, being glass, aluminum, mortar.
2. Silicone: Any member of family of polymeric products whose molecular backbone is made up of alternating silicon and oxygen atoms and which has pendant hydrocarbon groups attached to silicon atoms. Used primarily as a sealant. Offers excellent resistance to water and large variations in temperature (minus 100 deg F to + 600 deg F) (minus 73.3 deg C to + 316 deg C).

B. Reference Standards:
   1. ASTM International:
      a. ASTM C920-14a, 'Standard Specification for Elastomeric Joint Sealants'.
      b. ASTM C1193-16, 'Standard Guide for Use of Joint Sealants'.
      c. ASTM C1330-18, 'Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants'.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Scheduling:
   1. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.
   2. Ensure sealants are cured before covering with other materials.

1.4 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
      b. Manufacturer's literature for each Product.
      c. Schedule showing joints requiring sealants. Show also backing and primer to be used.

B. Informational Submittals:
   1. Certificates:
      a. Manufacturer's Certificate:
         1) Certify products are suitable for intended use and products meet or exceed specified requirements.
         2) Certificate from Manufacturer indicating date of manufacture.
   2. Manufacturers' Instructions:
      a. Manufacturer's installation recommendations for each Product.
      b. Manufacturer's installation for completing sealant intersections when different materials are joined.

1.5 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten (10) years documented experience.
   2. Applicator Qualifications:
      a. Company specializing in performing work of this section.
      b. Provide if requested, reference of projects with minimum three (3) years documented experience, minimum three (3) successfully completed projects of similar scope and complexity, and approved by manufacturer.
      c. Designate one (1) individual as project foreman who shall be on site at all times during installation.

B. Preconstruction Testing:
   1. Pre-construction testing is not required when sealant manufacturer can furnish data acceptable to Architect based on previous testing for materials matching those of the Work.

C. Mockups:
   1. Provide mockups including sealant and joint accessories to illustrate installation quality and color if requested by Architect or Project Manager.
      a. Incorporate accepted mockup as part of Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements:
   1. Deliver and keep in original containers until ready for use.
   2. Inspect for damage or deteriorated materials.

B. Storage and Handling Requirements:
   1. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets (MSDS).
   2. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
   3. Store in a cool dry location, but never under 40 deg F (4 deg C) or subjected to sustained temperatures exceeding 90 deg F (32 deg C) or as per Manufacturer's written recommendations.
   4. Do not use sealants that have exceeded shelf life of product.

1.7 FIELD CONDITIONS

A. Ambient Conditions:
   1. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
   2. Follow Manufacturer’s temperature recommendations for installing sealants.

1.8 WARRANTY

A. Manufacturer Warranty:
   1. Signed warranties against adhesive and cohesive failure of sealant and against infiltration of water and air through sealed joint for period of three (3) years from date of Substantial Completion.
      a. Manufacturer's standard warranty covering sealant materials.
      b. Applicator’s standard warranty covering workmanship.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Manufacturers:
   1. Manufacturer Contact List:
      a. Dow Corning Corp., Midland, MI www.dowcorning.com.
      b. Franklin International, Inc. Columbus, OH www.titebond.com.
      c. GE Sealants & Adhesives (see Momentive Performance Materials Inc.).
      d. Laticrete International Inc., Bethany, CT www.laticrete.com.
      e. Momentive Performance Materials Inc. (formally GE Sealants & Adhesives), Huntersville, NC www.ge.com/silicones.
      f. Sherwin-Williams, Cleveland, OH www.sherwin-williams.com.
      g. Sika Corporation, Lyndhurst, NJ www.sikaconstruction.com or Sika Canada Inc, Pointe Claire, QC www.sika.ca.
      h. Tremco, Beachwood, OH www.tremcosealants.com or Tremco Ltd, Toronto, ON (800) 363-3213.

B. Materials:
   1. Design Criteria:
      a. Compliance: Meet or exceed requirements of these standards:
         1) ASTM C920: Elastomeric joint sealant performance standard.
      b. Comply with Manufacturer’s ambient condition requirements.
      c. Sealants must meet Manufacturer's shelf-life requirements.
      d. Sealants must adhere to and be compatible with specified substrates.

e. Sealants shall be stable when exposed to UV, joint movements, and environment prevailing at project location.
f. Primers (Concrete, stone, masonry, and other nonporous surfaces typically do not require a primer. Aluminum and other nonporous surfaces except glass require use of a primer. Installer Option to use Adhesion Test to determine if primer is required or use primer called out in related sections):
   1) Adhesion Test:
      a) Apply silicone sealant to small area and perform adhesion test to determine if primer is required to achieve adequate adhesion. If necessary, apply primer at rate and in accordance with Manufacturer's instructions. See 'Field Quality Control' in Part 3 of this specification for Adhesive Test.
   2) If Primer required, shall not stain and shall be compatible with substrates.
   3) Allow primer to dry before applying sealant.

2. Sealants At Exterior Sheet Metal And Miscellaneous:

a. Description:
   1) Weathersealing expansion, contraction, perimeter, and other movement joints which may include all or part of the following for project:
      a) Flashings.
      b) Gutters.
      c) Penetrations in soffits and fascias.
      d) Roof vents.
b. Design Criteria:
   1) Meet following standards for Sealant:
      a) ASTM C920: Type S Grade NS, Class 25 (min) Use NT, M, G, A and O.
   2) Limitations:
      a) Do not use below-grade applications.
      b) Do not use on surfaces that are continuously immersed or in contact with water.
      c) Do not use on wet, damp, frozen or contaminated surfaces.
      d) Do not use on building materials that bleed oils, plasticizers or solvents, green or partially vulcanized rubber gaskets or tapes.
c. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
   1) Dow Corning: 790 Silicone Building Sealant.
   2) Momentive Performance Materials (formerly, GE Sealants & Adhesives): GE SCS2350 Silicone Elastomeric Sealant.
   3) Tremco: Tremsil 600 Silicone Sealant.

2.2 ACCESSORIES

A. Bond Breaker Tape:
   1. Pressure sensitive tape as by Sealant Manufacturer to suit application.
   2. Provide tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.

B. Joint Backing:
   1. Comply with ASTM C1330.
   2. Flexible closed cell, non-gassing polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.
   3. Oversized 25 to 50 percent larger than joint width.

C. Joint Cleaner:
   1. Non-corrosive and non-staining type as recommended by Sealant Manufacturer, compatible with joint forming materials.

D. Masking Tape:
   1. Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine substrate surfaces and joint openings are ready to receive Work.
      a. Verify each sealant is compatible for use with joint substrates.
      b. Verify joint surfaces are clean and dry.
      c. Ensure concrete surfaces are fully cured.
   2. Sealants provided shall meet Manufacturer's shelf-life requirements.
   3. Notify Architect of unsuitable conditions in writing.
      a. Do not proceed until unsatisfactory conditions are corrected.
   4. Commencement of Work by installer is considered acceptance of substrate.

3.2 PREPARATION

A. Surface Preparation:
   1. Surfaces shall be clean, dry, free of dust, oil, grease, dew, frost or incompatible sealers, paints or coatings that may interfere with adhesion. Prepare substrates in accordance with Manufacturer’s instructions:
      a. Porous surfaces: Clean by mechanical methods to expose sound surface free of contamination and laitance followed by blasting with oil-free compressed air.
      b. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C1193. Allow solvent to evaporate prior to sealant application.
      c. Primers:
         1) Primers enhance adhesion ability.
         2) Use of primers is not a substitution for poor joint preparation.
         3) Primers should be used always in horizontal application where there is ponding water.
   2. Field test joints in inconspicuous location.
      a. Verify joint preparation and primer required to obtain optimum adhesion of sealants to joint substrate.
      b. When test indicates sealant adhesion failure, modify joint preparation primer, or both and retest until joint passes sealant adhesion test.
   3. Masking: Apply masking tape as required to protect adjacent surfaces and to ensure straight bead line and facilitate cleaning.

B. Joints:
   1. Prepare joints in accordance with ASTM C1193.
      a. Clean joint surfaces of contaminates capable of affecting sealant bond to joint surface using Manufacturer’s recommended instructions for joint preparation methods.
      b. Remove dirt, dust, oils, wax, paints, and contamination capable of affecting primer and sealant bond.
      c. Clean concrete joint surfaces to remove curing agents and form release agents.

C. Protection:
   1. Protect elements surrounding the Work of this section from damage or disfiguration.

3.3 APPLICATION

A. General:
   1. Apply silicone sealant in accordance with Manufacturer’s instructions.
   2. Do not use damaged or deteriorated materials.
   3. Install primer and sealants in accordance with ASTM C1193 and Manufacturer’s instructions.
   4. Apply primer where required for sealant adhesion.
   5. Install sealants immediately after joint preparation.
   6. Do not use silicone sealant as per the following:

a. Apply caulking/sealant at temperatures below 40 deg F (4 deg C).
b. Brass and copper surfaces.
c. Materials bleeding oils, plasticizers, and solvents.
d. Surfaces to be immersed in water for prolonged time.

B. Joint Backing:
1. Install joint backing to maintain sealant joint ratios recommended by Manufacturer.
2. Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
3. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch (9.5 mm) deep.

C. Bond Breaker:
1. Install bond breaker where joint backing is not used or where backing is not feasible.
a. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.

D. Sealant:
1. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint. Apply sealants in vertical joints from bottom to top.
2. Fill joint opening to full and proper configuration.
3. Apply in continuous operation.
4. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface. Tool joints in opposite direction from application direction, i.e., in vertical joints, from the top down. Do not 'wet tool' sealants.
5. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.

3.4 TOLERANCES

A. Provide joint tolerances in accordance with Manufacturer’s printed instructions.

3.5 FIELD QUALITY CONTROL

A. Adhesion Test (Installer Option to use adhesion test to determine if primer is required).
1. Perform adhesion tests in accordance with Manufacturer’s instructions and ASTM C1193, Method A, Field-Applied Sealant joint Hand-Pull Tab:
a. Perform three (3) tests of applied silicone sealant.
b. For sealants applied between dissimilar materials, test both sides of joints.
2. Sealants failing adhesion test shall be removed, substrates cleaned, sealants re-installed, and re-testing performed.
3. Maintain test log and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

3.6 CLEANING

A. Remove masking tape and excess sealant.

B. Clean adjacent materials, which have been soiled, immediately (before setting) as recommended by Manufacturer.

C. Waste Management: Dispose of products in accordance with manufacturer’s recommendation.

END OF SECTION

DIVISION 09: FINISHES

END OF TABLE OF CONTENTS

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SECTION 09 9001

COMMON PAINTING AND COATING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Common procedures and requirements for field-applied painting and coating.

B. Related Requirements:
   1. Section 07 9213: 'Elastomeric Joint Sealants' for quality of Elastomeric Joint Sealants.
   2. Sections under 09 9000 heading ‘Paints and Coatings’.
      a. Pre-Installation conferences held jointly with Section 09 9001.

1.2 REFERENCES

A. Definitions:
   1. Damage Caused By Others: Damage caused by individuals other than those under direct control of Painting Applicator (MPI(a), PDCA P1.92).
   2. Gloss Levels:
      a. Specified paint gloss level shall be defined as sheen rating of applied paint, in accordance with following terms and values, unless specified otherwise for a specific paint system.

Gloss Level ‘1’	Traditional matte finish - flat	0 to 5 units at 60 degrees to 10 units maximum at 85 degrees.
Gloss Level ‘2’	High side sheen flat - 'velvet-like' finish	10 units maximum at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level ‘3’	Traditional 'eggshell-like finish	10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level ‘4’	'Satin-like' finish	20 to 35 units at 60 degrees and 35 units minimum at 85 degrees.
Gloss Level ‘5’	Traditional semi-gloss	35 to 70 units at 60 degrees.
Gloss Level ‘6’	Traditional gloss	70 to 85 units at 60 degrees.
Gloss Level “7’	High gloss	More than 85 units at 60 degrees.

   3. Properly Painted Surface:
      a. Surface that is uniform in appearance, color, and sheen and free of foreign material, lumps, skins, runs, sags, holidays, misses, strike-through, and insufficient coverage. Surface free of drips, spatters, spills, and overspray caused by Paint Applicator. Compliance will be determined when viewed without magnification at a distance of 5 feet (1.50 m) minimum under normal lighting conditions and from normal viewing position (MPI(a), PDCA P1.92).
   4. Latent Damage: Damage or conditions beyond control of Painting Applicator caused by conditions not apparent at time of initial painting or coating work.

B. Reference Standards:
   1. The latest edition of the following reference standard shall govern all painting work:
      a. MPI(a), 'Architectural Painting Specification Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.
      b. MPI(r), 'Maintenance Repainting Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conferences:
   1. Schedule painting pre-installation conference after delivery of paint or coatings and before or at same time as application of field samples.
      a. Coordinate pre-installation conferences of all related painting and coating Sections under 09 9000 heading 'Paints and Coatings'.
      b. Schedule conference before preparation of control samples as specified in Sections under 09 9000 heading 'Paints and Coatings'.
   2. In addition to agenda items specified in Section 01 3100, review following:
      a. Review Quality Assurance for Approval requirements.
      b. Review Quality Assurance Field Sample requirements.
      c. Review Submittal requirements for compliance for MPI Approved Products.
      d. Review Design Criteria requirements.
      e. Review Cleaning requirements.
      f. Review painting schedule.
      g. Review safety issues.
   3. Review additional agenda items from Sections under 09 9000 heading 'Paints and Coatings'.

1.4 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Include following information for each painting product, arranged in same order as in Project Manual.
         1) Manufacturer's cut sheet for each product indicating ingredients and percentages by weight and by volume, environmental restrictions for application, and film thicknesses and spread rates.
         2) Provide one (1) copy of 'MPI Approved Products List' showing compliance for each MPI product specified.
            a) MPI Information is available from MPI Approved Products List using the following link: http://www.paintinfo.com/mpi/approved/index.shtml.
         3) Confirmation of colors selected and that each area to be painted or coated has color selected for it.
   2. Samples: Provide two 4 inch by 6 inch (100 mm by 150 mm) minimum draw-down cards for each paint or coating color selected for this Project.

B. Informational Submittals:
   1. Manufacturer Instructions:
      a. Manufacturer's substrate preparation instructions and application instruction for each painting system used on Project.
   2. Qualification Statement:
      a. Applicator:
         1) Provide Qualification documentation if requested by Architect or Owner.

C. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Record Documentation:
         1) Manufacturer's documentation:
            a) Manufacturer's cut sheet for each component of each system.

1.5 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approval:
   1. Conform to work place safety regulations and requirements of those authorities having jurisdiction for storage, mixing, application and disposal of all paint and related hazardous materials.

2. Paint and painting materials shall be free of lead and mercury, and have VOC levels acceptable to local jurisdiction.
3. Master Painters Institute (MPI) Standards:
   a. Products: Comply with MPI standards indicated and listed in 'MPI Approved Products List'.
   b. Preparation and Workmanship: Comply with requirements in 'MPI Architectural Painting Specification Manual' for products and coatings indicated.

B. Qualifications:
1. Applicator: Requirements of Section 01 4301 applies, but not limited to following:
   a. Minimum five (5) years' experience in painting installations.
   b. Minimum five (5) satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
   c. Maintain qualified crew of painters throughout duration of the Work.
   d. Upon request, submit documentation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
1. Deliver specified products in sealed, original containers with Manufacturer's original labels intact on each container.
2. Deliver amount of materials necessary to meet Project requirements in single shipment.

B. Storage And Handling Requirements:
1. Store materials in single place.
2. Keep storage area clean and rectify any damage to area at completion of work of this Section.
3. Maintain storage area at 55 deg F (13 deg C) minimum.

1.7 FIELD CONDITIONS

A. Ambient Conditions:
1. Perform painting operations at temperature and humidity conditions recommended by Manufacturer for each operation and for each product for both interior and exterior work.
2. Apply painting systems at lighting level of 540 Lux (50 foot candles) minimum on surfaces to be painted.
   a. Inspection of painting work shall take place under same lighting conditions as application.
   b. If painting and coating work is applied under temporary lighting, deficiencies discovered upon installation of permanent lighting will be considered latent damage as defined in MPI Manual, PDCA P1-92.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Performance:
1. Design Criteria:
   a. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   b. All materials, preparation and workmanship shall conform to requirements of 'Architectural Painting Specification Manual' by Master Painters Institute (MPI).
   c. All paint manufacturers and products used shall be as listed under Approved Product List section of MPI Painting Manual.
   d. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
   e. Provide products of same manufacturer for each coat in coating system.

f. Color Levels:
   1) Color Level II:
      a) Number and placement of interior and exterior paint colors and gloss levels shall be as defined by Color Level II from MPI Manual, PDCA P3-93 as modified in following paragraph.
      b) No more than one paint color or gloss level will be selected for same substrate within designated interior rooms or exterior areas.
   2) Color Level III:
      a) Number and placement of interior and exterior paint colors and gloss levels shall be Color Level III from MPI Manual, PDCA P3-93 as modified in following paragraph.
      b) Several paint colors or gloss levels will be selected for same substrate within designated interior rooms or exterior areas.

B. Materials:
   1. Materials used for any painting system shall be from single manufacturer unless approved otherwise in writing by painting system manufacturers and by Architect. Include manufacturer approvals in Product Data submittal.

PART 3 - EXECUTION

3.1 APPLICATORS

A. Approved Applicators:
   1. Meet Quality Assurance Applicator Qualifications as specified in Part 1 of this specification.

3.2 EXAMINATION

A. Verification Of Conditions:
   1. Directing applicator to begin painting and coating work will indicate that substrates to receive painting and coating materials have been previously inspected as part of work of other Sections and are complete and ready for application of painting and coating systems as specified in those Sections.

B. Pre-Installation Testing:
   1. Before beginning work of this Section, examine, and test surfaces to be painted or coated for adhesion of painting and coating systems.
   2. Report in writing to Architect of conditions that will adversely affect adhesion of painting and coating work.
   3. Do not apply painting and coating systems until party responsible for adverse condition has corrected adverse condition.

C. Evaluation And Assessment:
   1. Report defects in substrates that become apparent after application of primer or first finish coat to Architect in writing and do not proceed with further work on defective substrate until such defects are corrected by party responsible for defect.

3.3 PREPARATION

A. Protection Of In-Place Conditions:
   1. Protect other finish work and adjacent materials during painting. Do not splatter, drip, or paint surfaces not intended to be painted. These items will not be spelled out in detail but pay special attention to the following:
      a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel, anodized aluminum, or monel metal.

B. Surface Preparation:
   1. Prepare surfaces in accordance with MPI requirements and requirements of Manufacturer for each painting system specified, unless instructed differently in Contract Documents. Bring conflicts to attention of Architect in writing.
   2. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust surfaces before painting or finishing.

3.4 APPLICATION

A. Interface With Other Work:
   1. Schedule painting and coating work to begin when work upon which painting and coating work is dependent has been completed. Schedule installation of pre-finished and non-painted items, which are to be installed on painted surfaces, after application of final finishes.

B. Paint or finish complete all surfaces to be painted or coated as described in Contract Documents.

C. Apply PAINTBALE sealant in gaps between two substrates that are both to be painted. Sealants in other gaps furnished and installed under Section 07 9213.

D. Spread materials smoothly and evenly. Apply coats to not less than wet and dry film thicknesses and at spreading rates for specified products as recommended by Manufacturer.

E. Touch up suction spots after application of first finish coat.

F. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.

G. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.

H. Finished work shall be a 'Properly Painted Surface' as defined in this Section.

3.5 FIELD QUALITY CONTROL

A. Non-Conforming Work:
   1. Correct deficiencies in workmanship as required to leave surfaces in conformance with 'Properly Painted Surface,' as defined in this Section.
   2. Correction of 'Latent Damage' and 'Damage Caused By Others,' as defined in this Section, is not included in work of this Section.

3.6 CLEANING

A. General:
   1. As work proceeds and upon completion of work of any painting Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition.

B. Waste Management:
   1. Remove rags and waste used in painting operations from building each night. Take every precaution to avoid danger of fire.
   2. Paint, stain and wood preservative finishes and related materials (thinners, solvents, caulking, empty paint cans, cleaning rags, etc.) shall be disposed of subject to regulations of applicable authorities having jurisdiction.
   3. Remove debris caused by work of paint Sections from premises and properly dispose.
   4. Retain cleaning water and filter out and properly dispose of sediments.

END OF SECTION

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SECTION 09 9112

EXTERIOR PAINTED FERROUS METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Preparing and painting new exterior ungalvanized iron and steel surfaces as described in Contract Documents.
   2. Preparing and painting following existing exterior ungalvanized iron and steel surfaces as described in Contract Documents:
      a. Roof top penetrations.
      b. Roof top B-vents.
      c. Roof top metal jack flashing.
      d. Roof top Penthouse.

B. Related Requirements:
   1. Section 09 9001: 'Common Painting And Coating Requirements':
      a. Pre-installation conference for Sections under 09 9000 heading ‘Paints and Coatings’.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conferences:
   1. Participate in pre-installation conference as specified in Section 09 9001.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:
   1. Category Four Approved Products and Manufacturers. See Section 01 6200 for definitions of Categories:
      a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved.

B. Description:
   1. New Surfaces: Use MPI(a) EXT 5.1M Waterborne Light Industrial Coating system.
   2. Previously Finished Surfaces: Use MPI(r) REX 5.1K Waterborne Light Industrial Coating.

C. Design Criteria:
   1. Systems specified are in addition to prime coats provided under other Sections of Project Manual.
   2. Finish Requirements: Use MPI Premium Grade finish requirements for work of this Section.
   3. Gloss / Sheen Level Required: Gloss Level 5.
   4. Colour: to match Cascadia Metals “Weathered Copper”. Provide samples.

D. Materials:
   1. All paints and coatings.
      a. Primer Coat: MPI Product 107, ‘Primer, Rust-Inhibitive, Water Based’.
      b. Finish Coats: MPI Product 163, ‘Light Industrial Coating, Exterior, Water Based, Semi-Gloss (MPI Gloss Level 5).

PART 3 - EXECUTION

3.1 APPLICATION

A. General: See appropriate paragraphs of Section 09 9001.

B. New Surfaces: Clean metal to be painted of rust, mill scale, grease, oil, and welding spatters, burrs, flux, slag, and fume. If all traces of rust cannot be removed, apply rust blocker recommended by Paint Manufacturer before applying primer coat.

C. Existing Painted Surfaces:
1. Remove deteriorated and chalked existing paint and rust down to sound substrate by scraping or power tools.
2. Clean existing sound painted surfaces as well as scraped and sanded existing painted surfaces as recommended by Paint Manufacturer. If all traces of rust cannot be removed, apply rust blocker recommended by Paint Manufacturer before applying primer coat.
3. Spot prime bare metal surfaces followed by a prime coat over entire surface to be painted.
4. Lightly sand entire surface.
5. Clean surface as recommended by Paint Manufacturer.
6. Apply specified 2 finish coats.

END OF SECTION

SECTION 09 9113

EXTERIOR PAINTED GALVANIZED METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Preparing and painting new exterior exposed galvanized metal surfaces as Described in Contract Documents.
   2. Preparing and painting following existing exterior exposed galvanized metal surfaces as described in Contract Documents.
      a. Roof top penetrations.
      b. Roof top B-vents.
      c. Roof top metal jack flashing.
      d. Roof top Penthouse.

B. Related Requirements:
   1. Section 09 9001: 'Common Painting And Coating Requirements':
      a. Pre-installation conference for Sections under 09 9000 heading ‘Paints and Coatings’.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conferences:
   1. Participate in pre-installation conference as specified in Section 09 9001.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:
   1. Category Four Approved Products and Manufacturers. See Section 01 6200 for definitions of Categories.
      a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved, providing they meet VOC requirements in force where Project is located.

B. Description:
   1. All Other:
      a. New Surfaces: Use MPI(a) EXT 5.3H Latex Finish system.
      b. Previously Finished Surfaces: Use MPI(r) REX 5.3H Latex Finish system.

C. Performance:
   1. Design Criteria:
      a. New Surfaces: MPI Premium Grade finish requirements.
      b. Deteriorated Existing Surfaces: MPI Premium Grade finish requirements.
      c. Sound Existing Surfaces: MPI Custom Grade finish requirements.
      d. Gloss / Sheen Level Required: Gloss Level 5.
      e. Colour: to match Cascadia Metals “Weathered Copper”. Provide samples.

D. Materials:
   1. Latex:
      a. Waterborne Primer Coat: MPI Product 134: ‘Primer, Galvanized, Water Based’.
      b. Finish Coats: MPI Product 11: ‘Latex, Exterior Semi-Gloss (MPI Gloss Level 5)’.

PART 3 - EXECUTION

3.1 APPLICATION

A. General: See appropriate paragraphs of Section 09 9001.

B. New Surfaces:
1. Clean 'passivated' or 'stabilized' galvanized steel as specified in SSPC-SP1.
2. After removal of 'passivated' or 'stabilized' coating or for surfaces without coating, clean surfaces to be painted with mineral spirits or product recommended by Paint Manufacturer. Change to clean rags or wiping cloths regularly to reduce possibility of re-contamination of surface.
3. Apply prime coat.
4. Apply 2 finish coats.

C. Existing Painted Surfaces:
1. Remove deteriorated and chalked existing paint and rust deposits down to sound substrate by sanding, scraping, or wire brushing.
2. Clean existing sound painted surfaces as well as scraped and sanded existing painted surfaces as recommended by Paint Manufacturer.
3. Apply prime coat.
4. Apply 2 finish coats.

D. Existing Unpainted Surfaces:
1. Wirebrush or power wash as necessary to remove 'white rust'.
2. Apply prime coat.
3. Apply 2 finish coats.

END OF SECTION