



**TENDER 2021
RFT-TC-002-21**

**DORCHESTER WATER TREATMENT FACILITY
ROOF REPLACEMENT**

January 25, 2021

TO: ALL BIDDERS

SUBJECT: TENDER FOR DORCHESTER WATER TREATMENT FACILITY ROOF REPLACEMENT

The Corporation of the Municipality of Thames Centre is requesting tenders to supply all labour, material, equipment for the Dorchester Water Treatment Facility roof replacement.

Attached is the subject tender that must be submitted to the Corporation of the Municipality of Thames Centre office located at 4305 Hamilton Road, Dorchester, ON, N0L 1G3 no later than 11:00 a.m. on February 11, 2021.

CHECKLIST

The following checklist has been included to ensure that all the requirements of the Municipality of Thames Centre:

1. The successful bidder will be required to submit proof of insurance as noted in the tender document.
2. The successful bidder will be required to enter and execute a contract with the Corporation of the Municipality of Thames Centre.
3. The successful bidder will be required to submit to the Corporation of the Municipality of Thames Centre, a W.S.I.B. Clearance Certificate.
4. Proponents have completed the Addendum Acknowledgement section if an addendum(s) has been issued. Failure to acknowledge the receipt of an addendum on the Tender Bid Form could result in your tender being rejected.
5. Please provide one (1) complete copy designated as the original.
6. The Tender Bid Form provided must be used. Alteration of the Tender Bid Form is prohibited. If white out is used, please initial your corrections
7. The Term & Conditions and Specifications have been carefully reviewed and all requirements have been submitted with your tender.



SECTION 2

TENDER TERMS & CONDITIONS RFT-TC-002-21

DORCHESTER WATER TREATMENT FACILITY ROOF REPLACEMENT

TERMS AND CONDITIONS

The undersigned hereby bids to perform or supply the work covered by this tender and must conform to the Corporation of the Municipality of Thames Centre Purchasing By-law

1. DEFINITIONS

In this proposal, as well as in all specifications, the following definitions shall apply unless otherwise indicated:

- a) "Town" means the Corporation of the Municipality of Thames Centre.
- b) "bidder" or "tenderer" or "proponent" means the individual, firm, company or corporation submitting the tender to the Town.
- c) "work" means any of the under-noted or any combination thereof;
 - (i) supply or provision of articles or materials;
 - (ii) supply of labour
 - (iii) performance of functions or tasks;
 - (iv) provision of services;
 - (v) equipment operated or not operated; or
 - (vi) construction or repairs as specified;
 - (vii) security deposit
- d) "total acquisition cost" means an evaluation of quality and service in the assessment of a bid and the sum of all costs including purchase price, all nonrefundable taxes, warranties, local service costs, life cycle costs, time of completion or delivery, inventory carrying costs, operating and disposal costs for determining the lowest compliant bid.

2. SCOPE OF WORK

The work consists of the supply of all labour, material, equipment and supervision necessary to complete the work shown, or described by, or reasonably inferred from these contract documents. Without limiting the qualifications of the foregoing, the work consists of the following: Thames Centre Municipal Office roof replacement.

3. COPIES OF TENDER

Bidders are requested to provide one original (1) copy of their tender.

4. ADDENDA

Bidders may, during the tender period, be advised by addenda of required additions to, deletions from, or alterations in the requirements of the tender documents.

Questions regarding the project and/or specifications will be submitted to the municipality before the deadline of February 4, 2020 at 3:00 PM.

A copy of all addenda shall be either hand delivered, sent by courier, electronic correspondence, or fax, to each prospective bidder who has obtained tender documents. Also, notice of the addenda will be posted on the Town's website.

Where an addendum must be issued later than two days prior to the specified closing date, the closing date may be extended to allow four working days between the issuance of the addendum and the revised closing date. **This extension of the closing date is optional and shall be used as required.**

Addenda will be issued under the following circumstances:

- a) Interpretations tender documents as a result of questions from prospective bidders;
- b) Revision, deletions, additions or substitutions of any portion of tender documents.

All such changes as addressed in the addenda shall become an integral part of the tender documents and shall be allowed for in arriving at the tender price.

5. COST INCURRED BY BIDDERS

All expenses involved with the preparation and submission of tenders to the Town, or any work performed in connection therewith shall be borne by the proponent. No payment will be made for any tenders received or for any other effort required or made by the proponent prior to commencement of work as defined by the proposal approved by the Corporation of the Municipality of Thames Centre.

6. WHEN BIDS EXCEED ESTIMATES

Re-tendering should be avoided when the bids exceed the estimate and the bid results have been read out at a public tender opening as the cost of re-tendering is very high. Therefore, the Corporation of the Municipality of Thames Centre reserves the right to negotiate with the lowest formal bidder.

7. GENERAL CONDITIONS, STANDARD SPECIFICATIONS AND DRAWINGS

All work shall be carried out in accordance with the current standards set out by the Ontario Industrial Roofing Construction Association (OIRCA) and all bidding contractors will be a recognized member of the OIRCA.

8. WORK LOCATION

Facility	Address
1. Dorchester Water Treatment Facility	2620 Dorchester Road, Dorchester, ON, N0L 1G3

9. CLOSING DATE AND OPENING OF TENDERS

Tenders shall be prepared on the forms provided and are to be sealed and submitted using the address label sheet provided and identified as a tender for the contract concerned on the tender envelope. All tenders will be hand delivered to the Municipal Office located at 4305 Hamilton Road in Dorchester, Ontario and delivered to the clerk at the desk to be time stamped. In the event of a of “State of Emergency” or “Mandatory Lockdown” that required the municipal office to be locked, all tenders will be placed in the drop box in a sealed envelope by the designated tender closing time. Tenders will be opened privately by the Town, due to the restrictions imposed by Health Unit regarding gathering under the covid-19 restrictions. Tender opening results may be posted on the Towns website at www.thamescentre.on.ca. Bidders will be advised by letter of the acceptance, or otherwise of their tender, as soon as the contract has been finally awarded.

10. CONFIDENTIALITY

The contractor, on behalf of itself, its directors, officers, employees, agents and subcontractors, acknowledges that for the purposes of this tender, it is bound by the provisions of the ***Municipal Freedom of Information and Protection of Privacy Act***, R.S.O. 1990, c. M.56, as amended by (the “Act”). The contractor agrees that all information provided to it by the Town, or gathered in the course of providing services is being provided on a confidential basis for the purposes of the administration of the services being provided by the contractor and is protected by the provisions of the Act.

The contractor shall not use, at any time during the term of this contract, or thereafter, any of the information acquired by it during the course of carrying out the services provided for herein for any purposes other than the provision of the services or such other purposes authorized in writing by the Town.

11. SUBSTITUTIONS

Where, if pursuant to the contract documents, the bidder is required to supply an article or group of related articles designated by trade or supplier’s name followed by the words “or approved equal” or similar such terminology, the tender shall be based only upon supplying the article or group of articles so designated, which shall be regarded as the standard of quality required by the specifications.

No ruling on a proposed substitution and “approved equal” will be made prior to acceptance of the tender. No substitutions shall be made without the prior written approval of the appropriate Department Head or their designate. No tender price shall be based on a presumed acceptance by the appropriate Department Head or their designate of a substitute item or supply.

12. TAXES, DUTIES AND FREIGHT

The appropriate taxes will be charged and indicated in the total bid price.

Changes to government Taxes

Where a change in federal or provincial taxes occur after the tender closing date for a contract, and this change could not have been anticipated at the time of bidding, the

Town will increase or decrease contract payments to account for the exact amount of tax involved. Claims for compensation for additional tax cost shall be submitted by the bidder to the Corporation of the Municipality of Thames Centre. Such claims for additional costs shall be submitted no later than 30 days after the date of acceptance of the work.

Prices shall be F.O.B. destination shown and shall include all fees, charges, surcharges and/or expenses associated with the delivery of any kind.

13. PERMITS/LICENCES/APPROVALS

Unless otherwise expressly agreed by the Town in writing, the successful proponent shall be responsible for applying for, obtaining and maintaining, at its own cost (other than the building permit fees, municipal site plan approval or Committee of Adjustment applications fees) all necessary permits, licenses, consents and approvals relating to the provision of services in accordance with the contract and shall not do or suffer to be done anything in violation of any such permits, licenses, consents and approvals. If the attention of the successful proponent is called to any such violation on the part of the successful proponent, or of any person employed or engaged by the successful proponent, the successful proponent shall immediately desist from and correct such violation.

Further, upon completion of work, the bidder must furnish final certificates of approval by the inspecting authority.

14. AWARD

Should the Corporation of the Municipality of Thames Centre receive only one (1) tender on commodities/services that have a known multiple source potential, the right is reserved to recall or cancel the competition or to negotiate the prices/terms offered by the bidder.

The Corporation of the Municipality of Thames Centre reserves the right to make awards within 90 days from the date tenders are opened, unless otherwise specified in the tender, during which period tenders shall not be withdrawn unless the bidder distinctly states in his tender that acceptance thereof must be made in a shorter specified time.

A bidder must be prepared, if requested, to present evidence of experience, ability, service facilities and financial standing necessary to meet satisfactorily the requirements set forth or implied in the tender. All work must be scheduled and approved by the proper Town employee at the appropriate Town facility. The lowest or any tender not necessarily accepted.

15. EXECUTION OF CONTRACT

The bidder agrees that, notwithstanding anything to the contrary in this contract, that a maximum of 90 days shall be allowed between the date that tender are opened and the date that a tender is awarded, cancelled, or recalled.

Following contract award, the Corporation of the Municipality of Thames Centre shall notify the successful bidder that his tender had been accepted.

The successful bidder is to be allowed not more than five working days from receipt of the tender approval, to provide the necessary guarantees, insurance, submittals, etc. Failure to provide the necessary documents within the specified time may result in the forfeiture of the tender and/or any tender deposits.

There shall be no variation or substitution from this tender unless approved in writing by the Chief Administrative Officer or designate.

Receipts of the goods, materials, equipment, work or service shall not waive any of the terms and conditions hereof. Defective goods, material or equipment will be returned at the supplier's risk and expense.

Failure to deliver and/or complete within the times set out within this document, shall entitle the Town to cancel this tender without incurring or being liable for any costs, fees, charges or surcharges of any kind whatsoever.

Time is to be of the essence of this tender.

16. ASSIGNMENT

It is mutually agreed and understood that the bidder shall not assign, transfer, convey, sublet or otherwise dispose of his contract or his right, title or interest therein, or his power to execute such contract to any other person, firms, company, or corporation without the previous written consent of the appropriate Director or designate from the Town.

17. WORKERS' SAFETY AND INSURANCE

Bidders shall submit, prior to commencement of work, a certificate of good standing from the Workers' Safety and Insurance Board of Ontario or independent status.

- a) Please provide the following
 - i) Workplace Safety & Insurance Board Firm Number
 - ii) Workplace Safety & Insurance Board Account Number
 - iii) A "Clearance Certificate" issued by WSIB indicating that the bidder's account is in good standing.
- b) The bidder understands and agrees that the provisions of the ***Occupational Health & Safety Act*** and regulations and the Town's Health and Safety policies will be strictly adhered to at all times.
- c) The bidder will provide the following equipment when reporting on construction, renovation or service contracts, where required:

Hard hat; reflective traffic vest; first aid kit; flares; fire extinguisher; hearing protection; eye protection; CSA approved footwear, and that the equipment will be maintained in good operating order. Facemasks must be worn, and social distancing guidelines observed as outlined by the local health unit.
- d) The WSIB does recognize "Independent Operators" in the construction industry. This individual will have the following characteristics:

- offers services to various firms; reports to the government as a self-employed business (Revenue Canada/GST); owns and operates his/her equipment.

This person(s), therefore is not automatically covered for WSIB purposes. This person(s) must contact WSIB for a "worker status ruling" as an independent operator and subsequently provide the Town with a copy of the letter from the WSIB.

18. CONTRACT GUARANTEE AND INSURANCE

The bidder hereby agrees on acceptance,

- a) to perform this contract in accordance with the terms hereof;
- b) to save the Town, its agents or employees, harmless from liability of any kind for the use of any composition, secret process, invention, article or appliance furnished or used in the performance of the contract of which the bidder is not the patentee, assignee or licensee;
- c) to guarantee the work for a period of two (2) years unless otherwise specified herein, such guarantee to be against defective material or workmanship and to make good any consequential damage as a result of such damage or defect or repairs;
- d) to furnish adequate protection from damage for all work, to repair damage of any kind, for which their workers are responsible, to the premises or equipment, to his own work or the work of other persons;
- e) to pay for all permits, licenses and fees and to comply with all by-laws and regulations of the Town and other lawfully constituted authorities and with all relevant statutes or regulations;
- f) to carry comprehensive general liability (bodily injury and property damage) in the amount of five million (\$5,000,000) dollars unless otherwise stated. The comprehensive general liability insurance will include coverage for completed operations and contractual liability under this contract. The successful bidder will be required to provide the Town with insurance certificates evidencing the bidder's compliance. Certificate of insurance and insurance policies must clearly state that the Corporation of the Municipality of Thames Centre as an additional name insured. Before commencement of the work, the bidder shall provide the Town with a certified copy of the insurance.
- g) the liability insurance must cover the use of explosives prior to such use when the work involves the use of explosives. The bidder shall be solely responsible for all damage, loss or costs resulting directly or indirectly from the use of explosives. The bidder shall indemnify and save harmless to the Town from and against all claims, demands, loss, damages and costs resulting directly or indirectly from the use of explosives.
- h) The successful major roofing materials manufacturing proponent, and/or design principle firm is required to possess and provide evidence of a minimum amount of "Errors and Omission" (E&O) liability insurance coverage of no less than \$5,000,000.00.

With respect to the comprehensive general liability insurance, the Corporation of the Municipality of Thames Centre must be added as additional insured.

The certificate(s) of insurance and copies of insurance policy(ies), each stating that this insurance is the primary insurance for purposes of the bidder's general liability and property damage and any other claims against the Town, must be filed with the Chief Administrative Officer.

The bidder shall submit insurance certificates within fourteen days of official notification of contract award. The Corporation of the Municipality of Thames Centre reserves the right to approve all Certificates of Insurance.

The insurance coverage noted shall be maintained in force throughout the term of the contract. The policy shall provide the Town a 30 day written notice of any cancellation. The bidder shall be responsible for deductible amounts under the policies.

All risk property insurance shall be in joint names of the bidder and the Corporation of the Municipality of Thames Centre insuring not less than the sum of the amount of the contract price. The coverage shall be maintained continuously until 10 days after the date of the final certificate of payment.

Automobile Liability Insurance:

Automobile liability insurance in respect of licensed vehicles shall have limits of not less than \$2,000,000 insurance per occurrence for bodily injury, death and damage to property covering all licensed vehicles owned or leased by the bidder and endorsed to provide the Town with not less than 30 days notice in writing in advance of any cancellation.

19. RISK

The work shall remain at the risk of the bidder until delivery of the work covered by this tender.

20. HOLDBACK

In accordance with the ***Construction Liens Act***, a hold back in the amount of 10% of the total tender/proposal bid shall be enforced for a period of 45 days after substantial completion.

21. MATERIALS/EQUIPMENT

CSA or ESA Approval or other approved Agencies – all electrical equipment and component parts must be Canadian Standard Association (CSA) approved or Electrical Safety Authority (ESA) approved or other approved agencies.

- a) All materials required by the bidder in carrying out the terms of this contract shall be supplied at his expense.
- b) The bidder shall make or cause to be made and shall maintain an inventory of all hazardous materials and all hazardous physical agents that are present in the materials utilized by the bidder in carrying out the terms of this contract, in accordance with the ***Occupational Health & Safety Act***, as amended and the

Controlled Products Regulations under the Workplace Hazardous Materials Information System, as amended.

- c) The bidder shall ensure that:
 - i) every container utilized in carrying out the terms of this contract that contains hazardous material is and remains labeled in the prescribed manner.
 - ii) an unexpired material safety data sheet, containing such information.
 - iii) and material safety data sheets required by Clauses (i) & (ii) are made available by the bidder in compliance with the above-noted legislation or any other such legislation.
- d) The bidder is responsible for pre-start health & safety review.
- e) The bidder is responsible to comply with the provisions of the **Occupational Health and Safety Act**, regulations and the Corporation of the Municipality of Thames Centre, Health and Safety Policies, and the bidder further agrees that the Town shall be at liberty to terminate this contract or halt all or any part of the work there under without incurring any liability to the bidder, should the bidder be in breach of the aforesaid Act, regulations or policies;
- f) to save the Town, its agents or employees, harmless from liability of any kind to the Worker's Safety and Insurance Board arising out of the performance of this contract.
- g) to employ only licensed tradesmen where so required by law and to furnish satisfactory proof thereof when required by the Town.
- h) Supervision:

The bidder shall keep the contract under its control and shall not assign, transfer or sublet any portion without first obtaining the approval of the Town. The consent of the Town to any such assignment, transfer, or subletting shall not relieve the bidder of any responsibility for the proper commencement, execution and completion of the operation according to the terms of the contract. The bidder shall receive all notices, communication, orders, instructions, or legal service as if it were performing the work with its own equipment and personnel.

The bidder shall exercise competent supervision of work at all times through a supervisor who has authority to receive on behalf of the bidder any orders or communications relating to the work. Any supervisor or worker who is not acceptable to the Town, by reason of incompetence, improper conduct, etc., shall be replaced by the bidder forthwith.

The bidder shall abide by the hours of work for occupations involved in accordance with the law of the Province of Ontario or Government of Canada.

22. PAYMENT

Where there is a question of non-performance involved, payment in whole or in part against which to charge back any adjustments required, will be withheld.

Progress payments will be provided and approved by the Owners Representative in accordance to work completed and accepted by the Owner or Owners Representative.

23. QUANTITIES

Where quantities are set out in a schedule of unit prices which forms part of the contract documents, it is pointed out that these quantities are approximately only and are given as a basis for comparing tender only.

Payment will be based on the final quantities used. In the case of an error in extending the unit prices, the unit price shall be used to determine the corrected tender/proposal price.

The prices bid by the bidder shall include all costs incurred as a result of carrying out the work under winter conditions.

Contingency Allowance: Must be included in the bid price and will not be accepted as an addition unless through a change order.

24. CANCELLATION OR DELETION

The Town reserves the right to reject any or all tenders and the lowest or the highest, as the case may be, will not necessarily be accepted.

The Corporation of the Municipality of Thames Centre reserves the right to cancel or delete any portion of the work and the bidder agrees to such cancellation or deletion without any claim whatsoever because of such cancellation or deletion.

The Corporation of the Municipality of Thames Centre, in its uncontrolled and unfettered discretion, may declare a specific work not within the intent of this contract because of scope or quantity and reserves the right to call and let a separate tender for a similar work covered hereby and the bidder acknowledges such right and waives any claim for the Town's exercise thereof in good faith.

Notwithstanding the acceptance of a tender or the awarding of the contract by the Town, the contract shall not become effective and shall not be binding upon the Town until a written contract embodying the instructions, specifications, terms and conditions set out in the tender documents and the accepted tender of the successful bidder, has been executed by authorized Town officials.

In the event of strikes, accidents or unexpected events causing stoppage of work, the Town reserves the right to suspend this contract.

25. WITHDRAWAL OF OFFER

A bidder may request that his or her submitted tender be withdrawn, up until the closing time for a particular contract. Withdrawals can only be made in person and the bidder wishing to withdraw from a particular tender must attend at the Towns Office and execute an appropriate withdrawal form, signed by a principal of the bidder, or provide a letter from the bidder, signed by a principal, withdrawing the tender. The completed withdrawal form, specific to the time of return, shall then be signed by the agent and Town's CAO.

The withdrawal of a tender does not disqualify a bidder from submitting another tender for the same contract provided that all of the tender procedures are observed and the new bid is deposited prior to the terminal time for closure. However, unless withdrawal procedures have been followed, more than one (1) tender from the same bidder may result in the disqualification of the bidder.

The tender deposit shall be forfeited to the Town when a bidder attempts to withdraw his or her tender after tenders have been opened, in addition to any consequence or legal penalty that may apply.

26. INDEMNIFICATION (HOLD HARMLESS)

The successful proponent shall indemnify and hold harmless the Corporation of the Municipality of Thames Centre, its officers, Council members, partners, agents, representative and employees from and against all actions, claims, demands, losses, costs, damages, suits or proceedings whatsoever which may be brought against or made upon the Corporation of the Municipality of Thames Centre and against all loss, liability, judgments, claims, suits, demands or expenses with the Corporation of the Municipality of Thames Centre may sustain, suffer or be put to resulting from or arising out of the successful proponent's failure to exercise reasonable care, skill or diligence or omissions in the performance or rendering of any work or service required hereunder to be performed or rendered by the successful proponent, its agent, officials and employees.

27. THE BIDDER/PROPONENT DECLARES THAT:

- a) No person, other than the bidder has any interest in this tender or in the contract proposed to be entered into.
- b) This tender is made without any connection, knowledge, comparison of figures or arrangements with any other person or persons, making a tender for the same work, and is in all respects fair and without collusion or fraud.
- c) That several matters stated in the said tender are in all respects true.
- d) The bidder has carefully examined the locality and site of the proposed works, and offers to enter into a contract and to do all the work, on the terms and conditions, and under the provisions herein set forth, and to accept full payment therefore in accordance with the schedule of prices hereto annexed, and the bidder also agrees that this tender is to continue open to acceptance until this tender is executed on behalf of the Town and that the Town may at any time without notice, accept this tender whether any other tender has been previously accepted or not, and the bidder hereby agrees that if the bidder withdraws this tender before the Town shall have considered the tender and awarded a contract, the amount of the deposit on this tender shall be forfeited to the Town.
- e) No member of Council or employee of the Town has any pecuniary interest, direct or indirect in this tender/proposal.
- f) The bidder as well as his heirs, executors, administrators, successors and assigns are deemed to forfeit all claims against the Town under the contract including claims for all work done and/or supplies and/or services furnished under it if it should appear that a member of Council or an employee of the Town

has been given, has, or is at any time given a pecuniary interest direct or indirect in this tender/proposal or a contract resulting from this tender/proposal.

28. FREEDOM OF INFORMATION AND PRIVACY ACT

The Corporation of the Municipality of Thames Centre will consider all bidder responses as confidential subject to the limitations set out under the ***Municipal Freedom of Information and Protection of Privacy Act***, 1989.

29. PRIVILEGE CLAUSE

Council and the Clerk's Department, as the case may be, shall, in awarding contracts, have regard to:

1. Compliance with specifications;
2. The total acquisition cost;
3. The ability, capacity and skill of the supplier to perform the contract;
4. Whether the supplier can perform the contract promptly and within the time specified without delay or interference;
5. The quality of performance of previous contracts with the Town and with others;
6. The sufficiency of the financial resources of the supplier to satisfy the contract;
7. The quality, availability and adaptability of the goods and services to the particular use required;
8. The ability of the supplier to provide future maintenance and services; and
9. Any other specifications included in the contract;
10. All tenders or any tender may be rejected and the contract may be awarded to any supplier not necessarily the lowest or highest as the case may be.

30. RECORD AND REPUTATION

Without limiting or restricting any other right or privilege of the Town and regardless of whether or not a bidder otherwise satisfies the requirements of a tender, the Town may reject summarily any tender from any person where:

1. In the opinion of the Council of the Municipality of Thames Centre, the commerce relationship between the Town and the bidder has been impaired by the prior and/or current act(s) or omission(s) of such bidder including but not limited to:
 - a) Litigation with the Corporation of the Corporation of the Municipality of Thames Centre;
 - b) The failure of the bidder to pay, in full, all outstanding payments (and where applicable, interests and costs) owing to the Town by such proponents, after the Town has made demand for payment of the same;

- c) The refusal to follow reasonable directions of the Town or to cure a default under any contract with the Town as and when required by the Town or the Town's Representatives;
 - d) The proponent refusing to enter into a contract with the Town after the bidders' tender, has been accepted by the Corporation of the Municipality of Thames Centre;
 - e) The bidder refusing to perform or to complete performance of a contract with the Town, at any time, after the proponent has been awarded the contract by the Town;
 - f) Act(s) or omission(s) resulting in a claim by the Town under a bid bond, a performance bond, a warranty bond or any other security required to be submitted by the proponent on a tender; within the five (5) year period immediately proceeding the date on which the tender is awarded;
2. In the opinion of the Council of the Corporation of the Municipality of Thames Centre or the Clerk's Department, there are reasonable grounds to believe that it would not be in the best interest of the Town to enter into a contract with the proponent, including (without limiting the generality of the foregoing);
- a) The conviction of that person or any person with whom that person is not at arm's length within the meaning of the **Income Tax Act** (Canada) of an offence under any taxation statute in Canada;
 - b) The conviction or finding of liability of that person under the **Criminal Code** or other legislation or law, whether in Canada or elsewhere and whether of a civil, quasi-criminal or criminal nature, of moral turpitude including but not limited to fraud, theft, extortion, threatening, influence peddling and fraudulent misrepresentation;
 - c) The conviction or finding liability of that person under the **Environmental Protection Act**, or corresponding legislation of any other province or any member of the European Union or the United States of America, where the circumstances of that conviction evidence of a gross disregard on the part of that person for the environmental well-being of the communities in which it carries on business;
 - d) The conviction or finding of liability of that person relating to product liability or occupational health or safety, whether of Canada or elsewhere, where the circumstances of that conviction evidence a gross disregard on the part of that person for the health and safety of its workers or customers;
 - e) The conviction or finding of liability of that person under the **Securities Act** or the corresponding legislation of any other province or any member of the European Union or the United States of America or any state thereof.

31. VALIDITY OF TENDERS

See Schedule 'A', attached hereto.

32. TERMS & CONDITIONS

All Terms and Conditions must conform to the Town's Schedule "A".

33. ERRORS AND OMISSIONS

The Corporation of the Municipality of Thames Centre shall not be held liable for any errors or omissions in any part of this tender. While the Corporation of the Municipality of Thames Centre has used considerable effort to ensure an accurate representation of information in this tender, the information contained in the tender is supplied solely as a guideline for bidders. The information is not guaranteed or warranted to be accurate by the Corporation of the Municipality of Thames Centre, nor is it necessarily comprehensive or exhaustive. Nothing in the tender is intended to relieve the bidders from forming their own opinions and conclusions with respect to the matters addressed in the tender.

34. CONFLICT OF INTEREST

All firms are required to disclose to the Town any potential conflict of interest, may it be pecuniary or otherwise. If a conflict of interest does exist with the potential successful proponent, the Town may, at its discretion, refrain from awarding the project to the proponent.

The proponent covenants that it presently has no interests and it shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its service hereunder. The proponent further covenants that in the performance of this contract no person having such known interest shall be employed.

35. EXCLUSIVITY CLAUSE

The Town makes no guarantee of the value or volume of work to be assigned to the successful proponent. The Agreement executed with the successful proponent will not be an exclusive contract for the provision of the described deliverables. The Town may contract with others for the same or similar deliverables to those described or may obtain the same or similar deliverables internally.

Bidders and proponents that do not follow this instruction may be subject to disqualification.

36. RESULTS

The name of the successful proponent and the accepted price shall be deemed public information following the award of the contract; however, unit prices will not be disclosed where tenders were requested as a total contract price.

We reserve the right to publish the total bid amounts of the successful proponent.

37. ELECTRONIC COMMERCE

When proponents are provided with the option of emailing their tender response to the noted tender email address, please ensure that the representative authorized to bind the corporation/company/partnership signs the tender bid form via electronic signature. NOTE: No electronic tender bids will be accepted for this project, all bids must be hand delivered as per the instructions provided.

38. TERMS OF PAYMENT

The terms of payment for all invoices relating to this tender/proposal are net 30 days unless otherwise specified in the document.

39. SALES TAX

The successful bidder, if and when required, will provide any necessary documentation that the Town would require to support sales tax recovery claims.

**Section 2
Schedule "A"**

	IRREGULARITY	RESPONSE
1	Late Bid.	Automatic rejection and not opened or read publicly.
2.	Failure to attend Pre-bid Meeting	Automatic rejection.
3	Unsealed Envelope.	Automatic rejection.
4	Bids completed and/or signed in erasable medium	Automatic rejection.
5	All required sections of bid documents not completed.	Automatic rejection unless, in the consensual opinion of the Agent, Department Head in charge of the bid solicitation and the Town solicitor, the incomplete nature is trivial or insignificant.
6	Qualified bids (bids qualified or restricted by an attached statement).	Automatic rejection unless, in the consensual opinion of the Agent, Department Head in charge of the bid solicitation and the Town solicitor, the qualification or restriction is trivial or not significant.
7	Bids received on documents other than those provided or specified by the Town.	Automatic rejection.
8	Bids containing clerical errors, which are trivial or insignificant.	Forty-eight hours to correct and initial errors. The determination of what constitutes trivial or insignificant errors shall be made in the consensual opinion of the Agent, Department Head in charge of the bid solicitation and the Town solicitor.
(b)	Corporate seal of the bidder and bond company, missing.	Forty-eight hours to correct.
9	Documents - execution	
(a)	Corporate seal or missing signature; signatory's authority to bind the corporation or signature missing.	Forty-eight hours to rectify situation.
(b)	Corporate seal and missing signature; signatory's authority to bind the corporation or signature missing.	Automatic rejection

10	Erasures, overwriting or strike out which are not initialed:	
(a)	Un-initialed changes to the tender documents, other than unit prices, which are trivial or not significant;	Forty-eight hours to initial. The determination of what constitutes trivial or insignificant un-initialed changes shall be made in the consensual opinion of the Agent, Department Head in charge of the bid solicitation and the Town solicitor.
(b)	Unit prices in the schedule of prices have been changed but not initialed and the Contract totals are consistent with the price as changed;	Forty-eight hours to initial change in unit price. The determination of what constitutes trivial or insignificant un-initialed changes shall be made in the consensual opinion of the Agent, Department Head in charge of the Bid Solicitation and the Town solicitor.
(c)	Unit prices in the schedule of prices have been changed but not initialed and the contract totals are consistent with the price as changed;	Automatic rejection.
11	Mathematical errors which are not consistent with the unit price.	Forty-eight hours to initial corrections as made by the Clerk's Department.
12	Failure to provide documents as outlined in submittals for review section as indicated in the specification documents within 48-hours of request.	Automatic rejection.
13	Bids, in which all necessary addenda, which have financial implication, have not been acknowledged.	Automatic rejection.
14	Any other irregularities.	The Agent, Department Head in charge of the bid solicitation and the Town solicitor acting in consensus shall have authority to waive other irregularities or grant 48 hours to initial such other irregularities, which they jointly consider to be trivial or insignificant.

Section 2 - Schedule "B"
Certificate of Insurance – Contractors

This is to certify that the insured, named below is insured as described below.

Name of Insured				Telephone Number (Area Code)		
Insured's Address		City		Postal Code		
Contract Title and Number to Which This Certificate Applies:						
Full Description of Work						
Liability	Insurer's Name	Policy Number	Effective Date Yr mo day	Expiry Date Yr mo day	Liability Limits (Bodily Injury & property Damage Inclusive)	<u>Deductible</u>
Commercial General Liability					\$	\$
Umbrella/Excess <input type="checkbox"/> Follow form auto <input type="checkbox"/> Follow form liability					\$	\$
Commercial General Liability	Includes: Occurrence Basis, including Personal Injury, Property Damage, Broad Form Property Damage (including completed Operations), Contractual Liability, Non-Owned Liability, Operations Performed by sub-Contractors, Employees as Additional Insured, Products Completed operations, Contingent Employers Liability, Cross Liability Clause and Severability of Interest Clause.					
CHECK WHICH OF THE FOLLOWING ARE INCLUDED IN THE COMMERCIAL GENERAL LIABILITY POLICY:						
<input type="checkbox"/> CCDC Compliance	<input type="checkbox"/> Total Pollution Exclusion	<input type="checkbox"/> Standard Pollution Exclusion	<input type="checkbox"/> Limited Pollution Coverage (120hrs)			
<input type="checkbox"/> Hot Process Roof Restriction	<input type="checkbox"/> Off –Premise Welding Excl.	<input type="checkbox"/> Off-Premise Welding Limit \$				
The Corporation of the Municipality of Thames Centre has been added as an additional insured to the above policies but only with respect to their interest in the operations of the Named Insured.						
Other Policies	Insurer's Name	Policy Number	Effective Date Yr Mo Day	Expiry Date Yr Mo Day	Limits of Coverage	
Motor Vehicle Liability "All vehicles owned or operated by the insured"						
Builder's Risk						
Environmental Impairment Liability						
Asbestos Abatement						
Mold Remediation						
Professional Liability						
Watercraft						
Other						

This certifies that the policies of insurance described above have been issued by the undersigned to the Insured named above and are in force at this time. If cancelled or materially changed in any manner that would affect the Municipality of Thames Centre as outlined in coverage specified herein for any reason, so as to affect this certificate, thirty (30) days prior written notice with the exception of motor vehicle liability being fifteen (15) days prior written notice, by registered mail or facsimile transmission will be given by the insurer(s) to:

THE CORPORATION OF THE MUNICIPALITY OF THAMES CENTRE
 4305 HAMILTON ROAD, DORCHESTER, ONTARIO, N0L 1G3

This certificate is executed and issued to the aforesaid Municipality of Thames Centre, the day and date herein written below.

Name and Address of Insurance Company or Broker (completing form)		Telephone Number (Area Code)	Fax Number (Area Code)
Name of Authorized Representative or Official (Please Print)	Signature of Authorized Representative or Official		Date (Year, Month, Day)



SECTION 3

SPECIFICATIONS, SCOPE OF WORK & TENDER BID FORM

**TENDER 2021
RFT-TC-002-21**

**DORCHESTER WATER TREATMENT FACILITY
ROOF REPLACEMENT**

**ATTACH THIS SHEET TO THE FRONT OF YOUR TENDER
ENVELOPE/PACKAGE SUBMISSION**

**TENDER
TO BE RETURNED TO:**

**THE CORPORATION OF THE
MUNICIPALITY OF THAMES CENTRE
4305 HAMILTON ROAD
DORCHESTER, ONTARIO, N0L 1G3**

**TENDER 2021
RFT-TC-002-21**

DORCHESTER WATER TREATMENT ROOF REPLACEMENT

TENDER CLOSING: February 11th, 2021 at 11:00 AM

Bidder's Name: _____

Address: _____

For Town Use Only	
Date Stamp	
_____	_____
Time Received	Employee Signature

NOTE: This address label/sheet must be affixed to the front of your sealed tender envelope/package submission. The Town will not be held responsible for envelopes or packages that are not labeled.

TENDER FORM

FOR THE PROVISION OF:	DORCHESTER WATER TREATMENT ROOF REPLACEMENT (2620 DORCHESTER ROAD, DORCHESTER, ONTARIO)
AS SUPPLIED BY:	FIRM NAME
	ADDRESS POSTAL CODE
HEREINAFTER CALLED THE BIDDER	

TO:	THE CORPORATION OF THE MUNICIPALITY OF THAMES CENTRE 4305 HAMILTON ROAD, DORCHESTER, ONTARIO N0L 1G3 HEREINAFTER CALLED THE BUILDING OWNER
-----	---

THE BIDDER DECLARES

1. No person(s), firm or corporation, other than the Bidder, has any personal interest in this Tender or in the award for which this Tender is made;
2. No officer or employee of the Corporation is or will become interested directly or indirectly as a contracting party, partner, shareholder, surety or in any portion of the profits thereof, or in any of the monies to be derived, therefrom;
3. This Tender is made without any connection, comparison of figures, or arrangements with, or knowledge of any other corporation, firm or person making a Tender for the same and is in all respects without collusion or fraud;
4. By signing this submission, I confirm I have read and understood the content and requirements of this Tender document;

ACKNOWLEDGEMENT TO RECEIPT OF ADDENDA

This will acknowledge receipt of the following addenda and, that the pricing tendered includes the provision set out in such addenda

ADDENDUM #	DATE RECEIVED
# _____	_____
# _____	_____
# _____	_____

Check here if NO Addenda received

LOWEST OR ANY TENDER NOT NECESSARILY ACCEPTED

DATED _____ 2021

SIGNATURE OF WITNESS

SIGNATURE OF BIDDER

By my signature, I hereby confirm I am a principal, or have been duly authorized by the principal/board, to sign on behalf of the above named.

SCHEDULE OF ITEMS AND PRICES

I/We have examined the conditions at the site, the drawings, specifications and all addenda thereto as acknowledged hereafter and hereby offer to furnish all materials, plant and labour for the proper completion of the entire work in all trades as planned and specified, and in accordance with the foregoing drawings, specifications and addendum for the sum of:

DESCRIPTION OF ITEM	PRICE
DORCHESTER WATER TREATMENT FACILITY (SECTION A) ROOF REPLACEMENT OPTION 1: 3-PLY SBS HIGH STRENGTH MODIFIED BITUMEN MEMBRANE WITH GRAVEL SURFACE (20-YEAR NDL LABOUR, WORKMANSHIP & MATERIAL WARRANTY) Price complete, including supply and installation of membrane restoration, site preparation, all labour, equipment, machinery, tools and parts used, all work as described herein, site clean-up, removal from site all packaging and rubbish, warranties, guarantees and all other costs.	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____
DORCHESTER WATER TREATMENT FACILITY (SECTION A) ROOF REPLACEMENT OPTION 2: 3-PLY SBS & SIS HIGH STRENGTH, SELF-HEALING MODIFIED BITUMEN MEMBRANE WITH GRAVEL SURFACE (25-YEAR NDL LABOUR, WORKMANSHIP & MATERIAL WARRANTY) Price complete, including supply and installation of membrane restoration, site preparation, all labour, equipment, machinery, tools and parts used, all work as described herein, site clean-up, removal from site all packaging and rubbish, warranties, guarantees and all other costs.	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____
DORCHESTER WATER TREATMENT FACILITY (SECTION A) ROOF REPLACEMENT OPTION 3: ADDITIONAL COST TO APPLY CLASS A FIRE RATED RUBBERIZED COAL TAR, SELF-HEALING FLOOD COAT & GRAVEL SURFACE (+5-YEAR NDL LABOUR, WORKMANSHIP & MATERIAL WARRANTY) Price complete, including supply and installation of membrane restoration, site preparation, all labour, equipment, machinery, tools and parts used, all work as described herein, site clean-up, removal from site all packaging and rubbish, warranties, guarantees and all other costs.	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____

Bidder: _____ **Date** _____

Signature: _____

Owner Acceptance: _____ **Date** _____

SCHEDULE OF ITEMS AND PRICES

I/We have examined the conditions at the site, the drawings, specifications and all addenda thereto as acknowledged hereafter and hereby offer to furnish all materials, plant and labour for the proper completion of the entire work in all trades as planned and specified, and in accordance with the foregoing drawings, specifications and addendum for the sum of:

DESCRIPTION OF ITEM	PRICE
PERIMETER WOOD BLOCKING ADDITIONAL LINEAR. FOOTAGE TO REPLACE DAMAGED PERIMETER WOOD BLOCKING IF REQUIRED	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____
	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____
	\$ _____
H.S.T.	\$ _____
TOTAL	\$ _____

Bidder: _____ **Date** _____

Signature: _____

Owner Acceptance: _____ **Date** _____

BIDDER INFORMATION FORM

**BIDDERS must complete this form and include with the Tender Submission
Please ensure all information is legible.**

1.	Bidder's Contact Individual	
2.	Office Phone #	
3.	Toll Free #	
4.	Cellular #	
5.	Fax #	
6.	e-mail address	
7.	Website	
8.	WSIB Account #	
9.	HST Account #	

Bidder: _____ **Date** _____

Signature: _____

Owner Acceptance: _____ **Date** _____

1.0 INVITATION TO TENDER

- .1 The Corporation of the Municipality of Thames Centre invites a tender for the replacement of all areas of the Dorchester Water Treatment facility roof located at 2620 Dorchester Road in Dorchester, Ontario.
- .2 The tenders shall be submitted by the bid closing date of: February 11, 2021 at 11:00 AM on the bid documents provided and placed in a sealed envelope and delivered in accordance with the instructions above in “Instructions to Bidders”
- .3 Questions arising from these specifications during the tender period shall be directed to the Corporation’s website at www.thamescentre.on.ca.
- .4 All bidding Contractors shall be a registered member of OIRCA and complete work in accordance to the standards set out by the OIRCA and shall meet the approval of the primary material manufacturer, with a minimum of 10-years of experience completing projects of similar type and scope.
- .5 Contractors are required to familiarize themselves with the site and project conditions at the building located at 2620 Dorchester Road in Dorchester, Ontario and must attend the mandatory pre-bid site meeting if interested in submitting a bid, scheduled for January 28, 2021 at 9:15 am.
- .6 ISO 9002 CERTIFICATION - The primary waterproofing membrane, mastics and resaturants shall be purchased only from companies that manufacture, produce, or purchase for resale these same products in accordance with a quality system that is currently certified and registered by an accredited registrar as meeting the minimum quality assurance standards outlined in the ISO 9001 or ISO 9002 program. The Manufacturer’s ISO certification number must be included in the bid documents along with the name of the licensed quality assessment auditing firm issuing the certification.

SECTION 00 72 00 - GENERAL CONDITIONS

PART 1 — GENERAL

1.1 DEFINITIONS

- A. The contract document consists of the AGREEMENT, the GENERAL CONDITIONS of the contract, the DRAWINGS and the SPECIFICATIONS, including all revisions hereto.
- B. The Owner, the Contractor and the Owner's Representative shall be indicated as such throughout these documents. The term Contractor as used herein shall designate the successful bidder to whom the roof contract is awarded.
- C. The term Owner shall be understood to be **The Corporation of the Municipality of Thames Centre.**

1.2 OWNER'S REPRESENTATIVE STATUS

- A. The Owner's Representative shall have general Rights of Inspection of the work and is the agent of the Owner in all matters pertaining to the work as provided in the Contract Documents. The Owner's Representative has the authority to stop work whenever such stoppage may be necessary to ensure the proper execution of the contract and shall have authority to reject any and all materials, whether worked or unworked, if such materials are not in accordance with the plans and specifications.

1.3 CONDITION OF SITE

- A. The bidders shall visit the site, and attend the mandatory pre-bid site meeting, before submitting their bids and determine the field conditions affecting their work. In considering the bids, the Owner will assume that the bidders are aware of all items, pertinent to their work and have made allowance for same in their bids.

1.4 VERIFICATION OF DIMENSIONS AND ELEVATIONS

- A. Dimensions and elevations indicated on the drawings in reference to existing structures or utilities are the best available data obtainable but are not guaranteed by the Owner's Representative and the Owner's Representative will not be responsible for their accuracy. Before bidding on any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, lines, levels or other conditions of limitations at the site to avoid construction errors. If any work is performed by the Contractor or any of his/her sub-contractors prior to adequate verification or applicable data, any resultant extra cost for adjustment of work as required to conform to existing limitations, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

1.5 PROTECTION OF OWNER'S OPERATIONS

- A. The Contractor shall erect such barriers, tarpaulins, doors, etc., as may be necessary to protect the Owner's operations while work is in progress. Any such openings that are

essential to carrying on the work shall be securely closed by the Contractor when not in use to protect the Owner's operations.

1.6 PROTECTION OF WORK AND PROPERTY

- A. The Contractor shall maintain adequate protection of all his/her work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. He/she shall provide and maintain at all times any danger signs, guards and/or obstructions necessary to protect the public and his/her workmen from any dangers inherent with or created by the work in progress. He/she shall hold the Owner harmless from any loss arising due to injury or accident to the public or his/her workmen, or from theft of materials stored at the job site. All materials will be stored in locations other than on roof surfaces except as necessary and shall then be placed on plywood or other type of material to protect the roof surface at all times.
- B. Before starting any work, the Contractor shall protect all grounds, copings, paving and exterior of all buildings where work will be performed.
- C. In those areas where materials and/or hot asphalt will be raised to the roof area, a protective covering shall be placed from the base of the wall extending up and over the top edge of the roof. This coverage shall be wide enough to assure that the exterior walls do not become stained or soiled during roofing operations.
- D. Any areas of the building or grounds which have become stained or damaged in any way shall be repaired or replaced by the Contractor prior to the final inspections. The method of repair used must be acceptable to both the Owner and the Owner's Representative.

1.7 MATERIAL STORAGE AND CLEAN-UP

- A. The Contractor shall keep the premises free from rubbish at all times and shall arrange his/her material storage so as not to interfere with the Owner's operations. At the completion of the job, all the unused material and rubbish shall be removed from the site. The ground shall be raked clean and the building shall be broom cleaned. If the Contractor refuses at any time to remove his/her debris from the premises, or to keep the working area clean, such cleaning will be completed by the Owner and deducted from the balance due the Contractor.
- B. The Contractor shall also remove drippage of bitumen or adhesive from all walls, windows, floors, ladders and finished surfaces. Failure to do so will result in the work being done by others and the cost shall be deducted from the balance due the Contractor.
- C. Materials must be delivered with manufacturer's label intact and legible. Labels must be affixed to the outside of the package stating the type of product, name and address of the manufacturer. All materials shall be stored and protected against weather, vandalism, and theft. Any materials found to be damaged or missing shall be replaced by the Contractor at no cost to the Owner.

1.8 INSPECTION OF WORK

- A. Where the drawings or specifications require the inspection and approval of any work in progress by the Owner's Representative, the Contractor shall give that Representative ample notice to allow for scheduling the inspection, which shall be made promptly to avoid delay of work. If work has progressed without the required inspections or approval by the Representative, it shall be uncovered for inspection at the Contractor's expense.
- B. Uncovering of work not originally inspected or uncovering questioned work may be ordered by the Owner's Representative and it shall be done by the Contractor. If examination proves such work to be incorrectly done or not done in accordance with the plans and specifications, the Contractor shall bear all cost of the reexamination. If the work is proven correctly installed, all such expense shall be borne by the Owner.

1.9 INSPECTION OF WORK IN PROGRESS AND UPON COMPLETION

- A. If directed by the Owner's Representative, the Contractor shall cut not more than four (4) cores, of approximately 200 square inches each, from every newly restored roof area, in order to establish the amount of materials used per square foot, and shall restore all such areas to sound and watertight conditions as prior to the core testing.
- B. In the event that such core cuts disclose any deficiency in materials, or soundness of construction, the Contractor shall, at his/her own expense, apply additional materials or otherwise correct the deficiencies to the satisfaction of the Owner's Representative.
- C. Noncompliance with the terms of this specification and ensuing contract can result in either the cancellation of the contract, or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken in a defective manner.
- D. Damages caused by water infiltration resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.
- E. The Owner will require the Owner's Representative to examine the work in progress, as well as upon completion, in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the Manufacturer.
- F. The authorized Owner's Representative shall be responsible for:
 - 1. Completing daily on-site inspection of work completed by the Roofing Contractor.
 - 2. Keeping the Owner informed on a periodic basis as to the progress and quality of the work;
 - 3. Calling to the attention of the Contractor those matters he/she considers to be in violation of the contract requirements;

4. Reporting to the Owner any failure or refusal of the Contractor to correct unacceptable practices.
 5. Conducting preliminary and subsequent job-site meetings with the Contractor's official job representative.
 6. Supervising the taking of test cuts, and the restoration of such areas;
 7. Rendering any other inspection services which the Owner may designate; and
 8. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Manufacturing Company.
- G. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of his/her contractual responsibilities.

1.10 MISCELLANEOUS UTILITIES

- A. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor.
- B. Water for concrete, mortar, washing and drinking purposes will be furnished by the Owner. Any connections to the water system shall be completed by the Contractor.
- C. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his/her work.
- D. Toilet facilities will be provided by the Contractor. The Contractor will be responsible for supplying a portable toilet on the job-site. The Contractor's personnel are not permitted to enter the building without proper authorization from the Owner or Owner's Representative.

1.11 CHANGES OR EXTRA WORK

- A. The Owner may, without invalidating the original contract, order such changes or additions as may from time to time be deemed desirable. In so doing, the contract price shall be adjusted, as stated below, with all work being done under the conditions of the original contract except for such adjustments in extension of time as may be acceptable to the Owner. The value of such extra work shall be determined in one of the following ways:
 1. By firm price adjustment;
 2. By cost plus with a guaranteed maximum;
 3. By cost with a fixed fee; or
 4. By unit cost.

- B. If agreement is reached that the extra cost shall be handled as per methods 2, 3, or 4, the Contractor shall keep and compile a correct amount of the cost together with such vouchers, etc., as may be necessary to substantiate same for presentation to the Owner. The Owner's Representative shall have authority to make minor job changes or additions as may be necessary to expedite the job providing such changes do not involve additional material cost. No major change or addition shall be made except upon receipt by the Contractor of a signed order from the Owner authorizing such a change. No claims for an extra to the contract price shall be valid unless so authorized.
- C. All work covered by unit prices submitted by the Contractor in his/her proposal must be covered by a written work order. The Owner's Representative will prepare the work order in triplicate covering the quantity of work and the total cost of the work. The work order which will be written at the end of each day, will be signed by the Owner's Representative and the Contractor's foreman and/or superintendent.

1.12 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

- A. The Contractor shall promptly remove any work that does not meet the requirements of the plans and specifications or is incorrectly installed or otherwise disapproved by the Owner or the Owner's Representative as failing to meet the intent of the plans and specifications. The Contractor shall promptly replace any such work without expense to the Owner and shall bear the cost of making good all work of other contractors, or the Owner, destroyed or damaged by such removal or replacement.

1.13 CORRECTION OF WORK AFTER FINAL PAYMENT

- A. The Contractor shall guarantee all materials and workmanship for two (2) years from date of final payment of the contract by the Owner. Any defects which may arise during this period shall be promptly repaired by the Contractor including any damage done to the Owner's property due to such defects.

1.14 DEDUCTION FOR UNCORRECTED WORK

- A. If the Owner deems it unacceptable to have the Contractor correct work which has been incorrectly done, a deduction from the contract price shall be agreed upon therefore. Such a deduction from the contract price shall in no way affect the Contractor's responsibility for defects which may occur nor his/her ability for correcting them, and damage caused by them.

1.15 LIENS

- A. The Contractor shall, if required by the Owner, furnish him/her with a release in full of all liens arising out of this contract or in lieu thereof, and receipts in full for all materials and labor on the job. In either case, the Contractor shall furnish an affidavit that the liens or receipts include all the labor and material for which a lien could be filed. In lieu of the above, the Contractor may at his/her option furnish a bond to indemnify the Owner against all hazard of liens. Neither part nor final payment shall in any way release the Contractor from the above obligation and in the event that part or full payment has been made and any

lien remains undischarged, the Contractor shall refund to the Owner the necessary funds to discharge such a lien including all cost and attorney's fees.

1.16 JOB CONDITIONS

- A. All surfaces to be covered shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. Pumping equipment shall be located on the ground at a safe distance from building; the location being subject to the approval of the Owner. The Contractor shall be responsible for guarding against fires, and shall provide suitable fire extinguishers conveniently located at the site. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner and dispersed so as to present a minimum fire hazard. Loads placed on the roof at any point shall not exceed the safe load for which the roof is designed.
- B. There is NO SMOKING allowed inside any buildings and the Contractor shall always be responsible for enforcement of this job rule with his/her personnel.
- C. The Contractor should be aware of Owner's property when tearing off the existing roof. This is required for removal of dirt, silt, debris, roof membrane and insulation from the roof surface in order to preserve the ecology, eliminate unsightly conditions and protect building surfaces. Specific locations will be discussed at the pre bid conference.
- D. Rolled Roofing Materials: All rolled roofing materials must be stored standing on end on a pallet or otherwise raised off the roof. The materials are to be covered in a proper manner to assure that they will not become wet prior to application. Any materials that becomes wet or damaged must be removed from the jobsite and replaced at the Contractor's expense.
- E. Asphalt Kettle: Placement of the kettle shall be in a position so as not to interfere with the ongoing operations of the Owner. The asphalt to be used must be placed on a protective covering of some type until it is raised to the roof. A minimum of two (2) fire extinguishers and "Fire Out" must be adjacent to the kettle.
- F. Ladders: Any ladders used on this project must be in good condition. The ladder must also be secured at the roof line at all times while in use. All ladders must be O.S.H.A. approved.
- G. No drugs or alcoholic beverages are permitted on the grounds.
- H. The Contractor shall place necessary barriers and/or protection around or under all work areas where his/her operations involve risk of injury to plant personnel.
- I. The Contractor will also protect the building structure from damage in the process of the job. If damage does occur to any property or equipment, or the Owner's work in process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.
- J. During the progress of the job, if waste material and rubbish are found or damage resulting from the Contractor's operations is found, or the Contractor does not comply with the requirement by keeping the premises free of accumulations and correct the damage, it shall

be the Owner's prerogative to hire personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.

- K. Existing roof top equipment walls, windows, etc. shall be completely protected by masking or other effective methods. Any mastics or asphalt must be cleaned off metal surfaces.
- L. The Contractor is responsible for protecting all materials from the elements. If any material, such as insulation, becomes wet, it cannot be installed and must be replaced at the Contractor's expense. NOTE: Insulation and rolled roofing materials must be covered with waterproof tarps at the end of each work day. Plastic wrappers supplied by the insulation manufacturer are not acceptable substitutes for tarps. The Owner's Representative will reject any covering method or material which does not adequately protect roofing materials.
- M. Anyone guilty of willful destruction or unlawful removal of company property will be dismissed from the job and is subject to prosecution by law.
- N. Any lawns damaged by Contractor vehicles will be restored with a stand of grass at the Contractor's expense. Any damaged pavements will likewise be restored and at the Contractor's expense.
- O. The Contractor must verify that all materials can be installed to accommodate the building design, pertinent codes and regulations, and the manufacturer's current recommendations.
- P. The Contractor will ensure that all substrates are clean, dry, sound, smooth, and free of dirt, debris, and other contamination before any materials are supplied.
- Q. Any isolated areas that must be torn off and replaced will be built-up to the height of the existing roof prior to the installation of the new roofing membrane system.

1.17 WORKMANSHIP

- A. All materials will be securely fastened and placed in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class or work upon which they are employed. All work shall be done in accordance with these specifications and shall meet the approval of the Owner or Owner's Representative. The Contractor's representative or job supervisor shall have a complete copy of specifications and drawings on the job-site at all times.
- B. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of work for that day.

1.18 INSULATION

- A. Insulation shall have accurate dimensional stability so as to properly conform to the surfaces of the roof, cants, curbs, pipes, etc. Joints between boards shall be tight and insulation shall be held back ½" from vertical surfaces and sumps. Insulation shall be protected from the weather at all times and remained tarped at the end of each days work. The original manufacturers wrap packaging is not an acceptable tarp. No more insulation

shall be laid than can be completely covered with roof materials on the same day. A base sheet shall not be considered as a proper weather barrier.

- B. Insulation that becomes wet during or after installation shall be removed and replaced with dry insulation. If roofing is in place, the roofing shall be also replaced. All replacing work shall be done at no added cost to the Owner.

1.19 ROOF DECK

- A. Contractor shall notify the Owner or Owner's Representative of any unforeseen areas of wet insulation. Where the damage is serious and extensive, it will be the Owner's prerogative to authorize removal and replacement of deteriorated roofing, insulation and repair of the vapor barrier, if present. Where damage to the roof deck is found, the Contractor shall furnish the Owner with a unit price for removal and replacement of the damaged deck.

1.20 SAFETY

- A. Contractor shall conform to requirements as designated by the Provincial and Federal Governments. Contractor shall abide by all regulations as outlined in the O.S.H.A. handbook and shall have a handbook on location at all times.
- B. Contractors hereby acknowledged that they and their workers have undergone Safety Training and shall at all times act in compliance with all NRCA recommended safety compliance rules and regulations.
- C. Workers shall be equipped with the appropriate personal protection equipment when on site completing their duties and work.
- D. Contractors shall wear facemasks and maintain social distancing as required by the local health authority while completing work on site until such time that these restrictions are lifted by the health authority, to help protect workers from the Covid-19 virus.

1.21 WORK HOURS AND DAYS

- A. When the Contract is awarded, the Contractor will contact the Owner's Representative to arrange the work schedule and the hours of the day that the workmen may be on the building. The job is to be bid under the assumption that all work will be performed on a straight time basis.

1.22 COMPLIANCE WITH LAWS

- A. The Contractor shall give notices, pay all fees, permits and comply with all laws, ordinances, rules and regulations bearing on the conduct of work.

1.23 OWNER'S RULES

- A. The Contractor and all his/her personnel/agent(s) shall abide by all rules created by the Owner. The Contractor must contact the Owner's Representative for specific information regarding the rules governing all operations of the project.
- B. The Contractor shall properly notify all employees of conditions relating to roof areas with very poor condition and which will be worked on. After such notification, the Contractor must take all necessary precautions to ensure the safety of his/her employees as well as the building personnel.
- C. The Contractor shall "Hold Harmless" the Material Manufacturer, against any litigation arising from any accidents during the course of the contract.

1.24 SAFETY AND ECOLOGY

- A. The Contractor(s) shall conform to the requirements as designated by the Federal and Provincial Governments (e.g., O.H.S.B and W.S.I.B.).

1.25 ANTI-DISCRIMINATION IN EMPLOYMENT

- A. Contractors and subcontractors shall not discriminate against any employees or applicant for employment, to be employed in performance of his/her contract, with respect to his/her hire, tenure, terms, conditions or privileges of employment because of his/her race, color, gender, sexual preference, religion, national origin, or ancestry.

1.26 START AND COMPLETION DATE

- A. Work shall begin within sixty (60) days from the award of this contract, or as agreed upon by the parties, and all work shall be completed no later than July 31, 2021.
- B. The Contractor is responsible for supplying trained workmen in proper numbers and for scheduling and laying out his/her work, so that it will be started and completed in a professional manner within the time period indicated on his/her Proposal form.
- C. If the Contractor sets equipment onto the job-site without commencing work immediately, the action will be considered "Spiking the job" which is unacceptable and will be considered a breach of contract by the Contractor; thereby, the contract will be terminated and the Contractor at no cost to the Owner, must remove his/her equipment and possessions from the job-site upon notification by the Owner.

1.27 SUPERINTENDENT

- A. The Contractor shall keep a competent superintendent, satisfactory to the Owner and Owner's Representative, on the job always when work is in progress. The superintendent shall not be changed without notifying the Owner and the Owner's Representative unless the superintendent ceases to be in the employ of the Contractor.

- B. The superintendent shall represent the Contractor in his/her absence and all directions and instructions given to the superintendent shall be as binding as if given directly to the Contractor.
- C. The superintendent shall be responsible for the conduct of all the Contractor's employees on the premises and shall promptly take necessary measures to correct any abuses called to his/her attention by the Owner.

1.28 INSPECTIONS

- A. Before any material applications are made, the Owner or his/her representative and the material supplier representative shall be available to ensure a complete understanding of the specification.
- B. The accepted Material Manufacturer will have a factory trained representative, on site daily, to conduct daily on-site inspections of the work completed by the contractor a minimum of two times per day and to verify compliance with the specifications, answer questions that may arise and provide on-going inspection services.
- C. A final inspection shall be conducted by Owner, Contractor, and the Owner's Representative upon being notified of completion of specified work and clean-up.

1.29 ENGINEERING

- A. In addition to high-quality products, the Material Manufacturer provides recommendations and/or specifications for the proper installation of its material. However, the Material Manufacturer does not, nor does its representative, practice engineering or architecture. The Material Manufacturer makes no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or other structural component of buildings upon which the Material Manufacturer products are applied, and further recommend a structural engineer to examine the deck conditions. Re-roofing or Ballasted Roofing Systems will require certification from a structural engineer that the structure will support the proposed additional weight.

1.30 GUARANTEES

- A. A roofing guarantee is available for review from the Material Manufacturer for the roofing systems published in these specifications. The guarantee will be issued only upon completion of all the guarantee requirements by an approved Contractor. Such guarantees cannot be altered or amended, nor may any other warranties, guarantees or representations be made by an agent or employee of the Material Manufacturer unless such alteration, amendment or additional representation is issued in writing and is signed by a duly authorized officer of the Material Manufacturer, and sealed with the Material Manufacturer seal. This guarantee does not cover cosmetic deficiencies. The Material Manufacturer will not be responsible for any damages to the building or its contents or any other consequential damages, and its responsible it limited to the repairing of leaks. The Contractor will warranty the roof to the Material Manufacturer for a period of two (2) years. The Contractor will inspect the roof with the Owner's Representative 18 months

after completion, and, at the Contractor's expense, correct any workmanship defects before the 24th month following completion of the project.

1.31 APPROVED CONTRACTORS

- A. The roof systems must be applied only by those contractors who have received approval from the Material Manufacturer for such installations. No guarantees will be issued when installation has been performed by a non-approved contractor.

1.32 ACCEPTABILITY OF COMPLETED WORK

- A. The acceptability of completed roofing work will be based on its conformance to the contract requirement. The Material Manufacturer is not obligated to accept non-conforming work, and such non-conforming work may be rejected. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the Material Manufacturer at the Contractor's expense. The Material Manufacturer will instruct the Contractor's foreman and work crew on the proper methods of installation of the roofing system and will follow-up on a regular basis to inspect the work being done. Any deficiencies from the specified work noted by the Material Manufacturer will be immediately reported to the Owner, along with recommended corrective actions necessary. The Material Manufacturer will not act in a supervisory capacity and will not be responsible for the Contractor's errors or omissions.

1.33 ENGINEERING AND ROOF DECK

- A. The Material Manufacturer nor its representatives, practice engineering nor architecture. It makes no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or other structural component of buildings upon which its products are applied. Re-roofing and general building structuring require certification from a structural engineer that the structure will support the proposed additional weight. In addition, the Contractor must notify the Owner or his/her representative on the job-site of any unforeseen areas of wet insulation. Where the damage is serious and extensive, it will be the Owner's prerogative to authorize removal and replacement of deteriorated roofing, insulation and repair of the vapor barrier if present. Where damage to the roof deck is found, the Contractor shall furnish the Owner with a unit price for removal and replacement of the damaged deck.

1.34 ASBESTOS IDENTIFICATION

- A. The Material Manufacturer routinely conducts roof surveys and inspections in order to provide recommendations and/or specifications for the use of its products. However, the MATERIALS MANUFACTURER IS NOT, NOR ARE ITS REPRESENTATIVES, CERTIFIED TO IDENTIFY, HANDLE OR MONITOR ASBESTOS IN ROOFING, DECKING OR INSULATION. THEREFORE, IT MAKES NO JUDGMENTS ON AND HEREBY DISCLAIMS ANY RESPONSIBILITY FOR IDENTIFYING, HANDLING OR MONITORING ASBESTOS. If a building owner suspects that an asbestos condition exists on or under the roof area in question, Material Manufacturer can recommend licensed laboratories and technicians that can identify, remove, dispose of, and monitor the project.

1.35 ASBESTOS LIMITATIONS

- A. The Owner has been informed, acknowledges and agrees that Material Manufacturer is not engaged in the business of identifying, abating, encapsulating or removing asbestos or asbestos containing materials from the work site and has not agreed to do so herein.
- B. IN CONSIDERATION OF THE PROVISION HEREOF, THE OWNER HEREBY AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE MATERIAL MANUFACTURER, ITS OWNERS, OFFICERS, DIRECTORS, EMPLOYEES AND AGENTS, INCLUDING THE ENGINEER FROM AND AGAINST ANY AND ALL LIABILITIES, DAMAGES, LOSSES AND EXPENSES (INCLUDING BUT NOT LIMITED TO ATTORNEY'S FEES) ARISING OUT OF, OR RELATING TO, ANY CLAIMS, DEMANDS, OR CAUSES OF ACTION OF ANY KIND, ATTRIBUTABLE TO, ARISING OUT OF, OR RELATING TO THE PRESENCE OF ASBESTOS OR ASBESTOS-CONTAINING MATERIALS ON OR AT THE WORK SITE AND/OR THE ABATEMENT, ENCAPSULATION AND/OR THE REMOVAL THEREOF.

1.36 MOLD LIMITATIONS

- A. Material supplier and/or material manufacturer makes no representation or warranty, express, implied, or otherwise, regarding mold, fungi, rust, corrosion or other bacteria or organism. Neither shall Garland have any duty to identify, nor accept any responsibility or liability for any claims associated with mold, fungi, rust, corrosion or other bacteria or organism related claims.

END OF SECTION

SECTION 3 – MODIFIED MEMBRANE ROOFING - HOT APPLIED

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes modified bituminous roofing system.
- B. SCOPE – ALL ROOF AREAS
- Remove the existing roof membrane and layers of insulation from the surface of the roof deck and properly dispose of the existing roof materials and metal counter flashings off site. Clean the remaining surfacing in preparation for the new roof membrane installation.
 - Remove any unused roof stacks and roof curbs and patch deck as required with a 20-ga steel plate fastened to the surface of the deck.

Field of Roof (3-Ply Mod-Bit Membrane – Type III Hot Asphalt)

- Install 2-ply of Type 15 felt in layers of hot asphalt at a rate of 25-lbs/100 sqft on to the surface of the concrete deck to form the vapour barrier. Extend all plies of the vapour barrier to the top outside edge of the parapet, and place elastomeric garlaflex mastic around the perimeter of all penetrations that protrude through the surface of the vapour barrier.
- Install one layer of 3” polyisocyanurate (ISO) insulation boards (4’x4’), fully adhered in a layer of hot Type III asphalt at EVT at a rate of 25-lbs/100 sqft and placed on top of the vapour barrier.
- Install a new layer of 1/2” high density, asphalt coated fiberboard insulation, 4’x4’ boards, fully adhered in a layer of hot type III asphalt at EVT at a rate of 25-lbs/100 sqft. Step all boards into place immediately after placement to ensure full contact adhesion. Tightly brace all seams to allow no gaps between the abutting boards. All joints must be staggered and offset between layers of insulation.
- Install a wood fibre cant in hot Type III asphalt along the base of all curbs, supports and perimeter edges as per manufacturers recommended installation details.
- Install pre-manufactured polyisocyanurate 8’x8’ drain sumps with tapered insulation around the perimeter of all internal drain inlets, and 4’x8’ tapered drain sumps around each of the perimeter scupper drain outlets, creating a sumped area that will enhance positive roof drainage.
- Install new drain inserts with u-flow compression gasket. Prime the surface of the drain flange and lay it into a bed of elastomeric garlaflex mastic.
- Install 2-ply of HPR Type IV glasfelts meeting ASTM D2178 in hot asphalt, Type III at EVT. Ensure full adhesion of each ply and good bleed out at all seams. Glasfelts to extend 2-inches beyond the top of the perimeter edge cant strips and curb cant strips.
- System Option 1: Install 1-ply of 100-mil, SBS modified bitumen cap sheet (minimum tensile strength: 300 lbf/in, minimum tear strength: 450 lbf) and meeting ASTM D6162, Type III Grade S, in hot asphalt (Type III at EVT) at a rate of not less than 30-lbs per 100 sqft per ply. Ensure full adhesion of each ply and good bleed out of asphalt adhesive at all seams. Field membrane is to extend 2-inches beyond the top of the perimeter cants and curb cants.
- System Option 2: Install 1-ply of 110-mil, SBS/SIS modified bitumen cap sheet (minimum tensile strength: 450 lbf/in, minimum tear strength: 850 lbf) and meeting ASTM D6162, Type III Grade S, in hot asphalt (Type III at EVT) at a rate of not less than 30-lbs per 100 sqft per ply. Ensure full adhesion of each ply and good bleed out of asphalt adhesive at all seams. Field membrane is to extend 2-inches beyond the top of the perimeter cants and curb cants.

- System Option 1: Install one ply of 40-mils, SBS modified bitumen base flashings (minimum tensile strength: 200 lbf/in, minimum tear strength: 250 lbf) and meeting ASTM D5147 around all perimeter edges, curbs, stacks, projections and drains followed by one ply of 140-mils, SBS modified bitumen, granule surfaced cap sheet (minimum tensile strength: 300 lbf/in, minimum tear strength: 450 lbf) and meeting ASTM D6162, Type III Grade S, in hot type III asphalt. Ensure perimeter and projection base flashing extends 6"-7" onto the field of the roof and the SBS modified bitumen cap flashings extends a minimum of 8"-9" onto the field of the roof.
- System Option 2: Install one ply of 40-mils, SBS modified bitumen base flashings (minimum tensile strength: 200 lbf/in, minimum tear strength: 250 lbf) and meeting ASTM D5147 around all perimeter edges, curbs, stacks, projections and drains followed by one ply of 150-mils, SBS / SIS modified bitumen, granule surfaced cap sheet (minimum tensile strength: 450 lbf/in, minimum tear strength: 850 lbf) and meeting ASTM D6162, Type III Grade S, in hot type III asphalt. Ensure perimeter and projection base flashing extends 6"-7" onto the field of the roof and the SBS/SIS modified bitumen cap flashings extends a minimum of 8"-9" onto the field of the roof.
- All flashings will extend up and over the outside edges of the parapet walls and perimeter edges where they will be back nailed the same day as installation, every 8" O.C. All vertical terminating flashings will extend a minimum of 8-inches in height above the surface of the finished roof membrane and finished with a termination bar, fastened every 8" O.C. with a 3-course of garlaflex and fiberglass mesh along the top terminating edges.
- Butter all flashing seams with a 3-course application of elastomeric garlaflex rubberized mastic and fiberglass mesh, extending from the top edge of the flashing to 3"- 4" beyond the base of the cant strips.
- Roofing Contractor will be responsible for all electrical and gas line disconnects/reconnects and will utilize the Building Owners approved contractors, The Roofing Contractor will be responsible for lifting all roof top units and equipment as required to complete the installation of the new roof system and will be included in their base bid price.
- Install water cutoffs at tie-ins to existing roofs and nightly temporary cutoffs. Tie-in will require an overlap of 12" using 2 plies of No.15 felt and fully glaze coated with hot bitumen.
- Install new spun aluminum stack flashings and tall cones and insulate (no solder seams permitted), laying the flanges into a bed of elastomeric garlaflex mastic and install a base and cap flashing as per manufacturers recommended installation details.
- Paint all existing stacks and vents with 2-coats of aluminized rust preventing paint.
- Where pitch pans are required, solder all seams on pitch pan, and install storm collar umbrellas to shed water beyond the perimeter edges of the pitch pan, caulking storm

collar seams with elastomeric polyurethane sealant. Fill all pitch pans with 2-part, self-leveling, 100% solids seal-tite urethane sealant.

- Topcoat with completed roof membrane with a flood coat of hot Type III bitumen at a rate of 60-70 –lbs / 100 sqft and immediately imbed new 3/8” pea gravel.
- OPTIONAL FLOOD COAT (+5 Year Warranty Option): Flood coat with a polymer modified, Class A fire rated, heavy-bodied, elastomeric coal tar flood coat top pour at a minimum rate of 5 gals/100 sqft and embed 3/8" pea gravel (at a rate of 500-600 lbs/100 sqft.).
- Install new 26-gauge pre-painted counter flashings colour matched existing trim panels on all HVAC curbs, vent curbs, and sleeper caps. Metal is to have hemmed edges, knuckled corners and s-locks and is to be secured by use of screws in the s-locks (i.e. no exposed fasteners) and counter flashings will extend to the base of the cant strips. Fasteners through the metal into the cant or through the exposed face of the metal cap or counter flashing panel will not be permitted.
- Install new 24-gauge wind hook cleats around the outside perimeter of the building and new 26-gauge pre-painted counter flashings colour matched existing trim panels on perimeter edges and walls. Metal is to have hemmed edges, knuckled corners and s-locks and is to be secured by use of screws in the s-locks (i.e. no exposed fasteners) and counter flashings will extend to the base of the cant strips. Fasteners through the metal into the cant or through the exposed face of the metal cap or counter flashing panel will not be permitted.
- Painting of the Gas Lines with RUSTGO Yellow paint and install new pre-manufactured gas line support blocks containing a foam base pad (quick blocks) placed every 8 to 10 feet.
- Raise perimeter edges with new wood blocking to match existing parapet as required to suit the thickness of the roof insulation, included in base bid.
- Re-install existing concrete patio stone pavers to original location, creating a walkway from the ladder access point to the roof top HVAC units and vents to match existing layout. Install all patio stone pavers on top of new 1” thick extruded polystyrene insulation board.
- Remove existing lightning protection cables and rod supports from the perimeter edge and metal edge flashings and place aside for reinstallation. Reinstall the cable clamps to the surface of the drip on the coping cap (i.e. not penetrating the perimeter flashings) via the existing clamps. Reinstall each of the lightning rod posts to the perimeter edge, placing a target patch of non-curing butyl tape behind each of the rods and fastening the rods through the butyl tape to the surface of the parapet.
- Clean entire project of debris and remove all equipment.
- Issue roofing manufacturer’s 20-year NDL (System Option 1), or 25-year NDL (System Option 2) leak free materials, labour and workmanship warranty, non-

prorated with no charge annual follow-up inspections completed by primary membrane manufacturer for the duration of the warranty period.

- All work will follow the OIRCA good roofing practices and the areas will be left clear of all debris and equipment at the completion of the project.

Related Sections:

1. Section 07 05 00 - Common Work Results for Thermal and Moisture Protection.
2. Section 07 01 51 - Maintenance of Modified Bituminous Membrane Roofing.

C. Related Work Specified Elsewhere:

1. Roofing Demolition: Section 07 01 55 - Modified Bituminous Membrane Re-Roofing Procedures.
2. Rough Carpentry: Section 06 10 00 - Rough Carpentry.
3. Roof Insulation: Section 07 22 00 - Roof Insulation.
4. Vapor Barrier: Section 07 26 15 - Above-Grade Vapor Barriers.
5. Sheet Metal Flashing and Trim: Section 07 62 00 - Sheet Metal Flashing and Trim.
6. Sheet Metal Roof Accessories: Section 07 71 00 - Roof Specialties.
7. Roofing Maintenance: 07 01 51 - Maintenance of Bituminous Membrane Roofing.

1.3 REFERENCES

A. American Society of Civil Engineers (ASCE):

1. ASCE 7-05, Minimum Design Loads for Buildings and Other Structures.

B. American Society for Testing and Materials (ASTM):

1. ASTM D41 Standard Specification for Asphalt Primer Used in Roofing, Damp-proofing and Water-proofing.
2. ASTM D312 Standard Specification for Asphalt Used in Roofing.
3. ASTM D451 Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
4. ASTM D1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
5. ASTM D1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.

6. ASTM D1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
 7. ASTM D2178 Standard Specification for Asphalt Glass Felt Used as a Protective Coating for Roofing.
 8. ASTM D2822 Standard Specification for Asphalt Roof Cement.
 9. ASTM D2824 Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
 10. ASTM D4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
 11. ASTM D5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
 12. ASTM D6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
 13. ASTM D6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
 14. ASTM E108 Standard Test Methods for Fire Test of Roof Coverings.
- C. Factory Mutual Research (FM):
1. Roof Assembly Classifications.
- D. National Roofing Contractors Association (NRCA):
1. Roofing and Waterproofing Manual.
- E. Underwriters Laboratories, Inc. (UL):
1. Fire Hazard Classifications.
- F. Warnock Hersey (WH):
1. Fire Hazard Classifications.
- G. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
1. ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.

1. Product technical data sheets for modified bitumen cap sheets showing their performance characteristics that meet or exceed the standards set out in the specification documents.
 2. Product technical data sheets for modified bitumen base and cap flashings showing their performance characteristics that meet or exceed the standards set out in the specification documents.
 3. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Submit documentation that the modified bitumen cap ply is modified with SBS and SIS rubber has a minimum of 20% recycled content.
 4. Product technical data sheets for Type IV glasfelts showing their performance characteristics that meet or exceed the standards set out in the specification documents.
 5. Product technical data sheets for self-healing, polymer modified coal tar-based restaurant coating.
- A. Specimen Warranty: Provide an unexecuted copy of the 20-year & 25-year, NDL, non-prorated warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.
 - B. A letter from the Primary Material Manufacturer stating that they agree to complete no-charge annual follow up inspections of the replacement roof for the duration of the warranty period.
 - C. A copy of the Manufacturer's recommended maintenance and roof care instructions for the new roof system.
 - D. A letter from the Primary Material Manufacturer stating that they agree to provide a factory trained, full time employee to complete daily on-site inspections of the work completed by the contractor a minimum of two times per day, and provide reports detailing the daily inspections to the building's owner.
 - E. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.
 - F. Written confirmation from the ORICA that the Roofing Contractor is an approved and active member of the organization.
 - G. Provide a copy of the primary manufacturers Errors & Omissions (E&O) liability insurance with a minimum coverage of five million dollars (\$5,000,000).
 - H. Any material submitted as equal to the specified material must be accompanied by a report signed and sealed by a professional engineer licensed in the Province in which the installation is to take place. This report shall show that the submitted equal meets

the Design and Performance criteria in this specification. Substitution requests submitted without licensed engineer approval will be rejected for non-conformance.

1.5 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B. Manufacturer's Certificate: Certify that materials are manufactured in Canada or the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- D. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- E. Test Reports: Submit third party validation of environmental claims, prepared UL Environment, and for all modified bituminous sheet material containing recycled content and/or bio-based content.
- E. A copy of the Manufacturers installation details required to meet the project scope and specification requirements.

1.5 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B. Manufacturer's Certificate: Certify that materials are manufactured in North America and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- C. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- D. Qualification data for firms and individuals identified in Quality Assurance Article below.
- E. Test Reports: Submit third party validation of environmental claims, prepared UL Environment, and for all modified bituminous sheet material containing recycled content and/or bio-based content.

1.6 CONTRACT CLOSEOUT SUBMITTALS

- A. General: Comply with Requirements of Division 01 Section - Closeout Submittals.
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

- C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.
- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- E. Demonstration and Training Schedule: Provide a schedule of proposed dates and times for instruction of Owner's personnel in the maintenance requirements for completed roofing work. Refer to Part 3 for additional requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than 20 years documented experience and have ISO 9001 certification.
- B. Installer Qualifications: Company specializing in modified bituminous roofing installation with not less than 10 years' experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.
- D. Maintain a copy of the Contract Documents in the possession of the Supervisor/Foreman and on the roof at all times.
- E. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
 - 1. Upon request of the Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.

1.8 PRE-INSTALLATION CONFERENCE

- A. Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where

applicable) Owner's insurers, testing agencies and governing authorities. Objectives of conference include:

1. Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
 2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
 3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 4. Review roofing system requirements (drawings, specifications and other contract documents).
 5. Review required submittals both completed and yet to be completed.
 6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 7. Review required inspection, testing, certifying and material usage accounting procedures.
 8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
 9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
 10. Review notification procedures for weather or non-working days.
- C. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- D. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved to the satisfaction of the Owner or Owner's Representative of Record. This shall not be construed as interference with the progress of Work on the part of the Owner or Owner's Representative of Record.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.

- B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to prevent moisture exposure. Store rolls of felt and other sheet materials on pallets or other raised surface. Stand all roll materials on end. Cover roll goods with a canvas tarpaulin or other breathable material (not polyethylene).
- C. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.
- D. Secure all material and equipment on the job site. If any material or equipment is stored on the roof, assure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the Contractor's actions will be the sole responsibility of the Contractor, and the deck will be repaired or replaced at his expense.

1.10 MANUFACTURER'S INSPECTIONS

- A. When the Project is in progress, the roofing system manufacturer will provide the following:
 - 1. Report progress and quality of the work as observed.
 - 2. Provide daily, on-site job inspections of work completed by the contractor twice per day.
 - 3. Report to the Owner and Owners Representative in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
 - 4. Confirm after completion that manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.11 PROJECT CONDITIONS

- A. Proceed with roofing work only when existing and forecasted weather conditions will permit a unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials subject to water or solar damage in quantities greater than can be weatherproofed during same day.
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank one (1) inch cap nails, or screws and plates at a rate of one (1) fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and four (4) ft o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install four (4) additional fasteners at the upper edge of the membrane when strapping the plies.

1.12 SEQUENCING AND SCHEDULING

- A. Sequence installation of roofing with related units of work specified in other Sections to ensure that roof assemblies, including roof accessories, flashing, trim and joint sealers, are protected against damage from effects of weather, corrosion and adjacent construction activity.
- B. Complete all roofing field assembly work each day. Phased construction will not be accepted.

1.13 WARRANTY

- A. Upon completion of installation, and acceptance by the Owner, the Manufacturer will supply to the Owner the appropriate twenty (20) year (System Option 1) or twenty-five (25) year (System Option 2), NDL, non-prorated warranty covering all system materials, labour and workmanship and will include no charge annual inspections and follow up by the manufacturer to ensure the roof continues to perform as expected.
- B. Installer will submit a two (2)-year warranty to the membrane manufacturer with a copy directly to Owner.

PART 2 — PRODUCTS

2.1 PRODUCTS, GENERAL

- A. Refer to Division 01 Section Common Product Requirements.
- B. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1. The design is based upon roofing systems engineered and manufactured by The Garland Company or approved equals:
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements,
 - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification Section. That specification Section shall be signed and sealed by a professional engineer licensed in the Province in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
 - 2. Include a list of three (3) projects of similar type and extent, located within a one-hundred-kilometer radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Owner or Owner's Representative.
 - 3. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.

4. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 DESCRIPTION

A. Modified bituminous roofing work including but not limited to:

1. Minimum two (2) plies of approved ASTM D2178, HPR Type IV glass fiber roofing felt bonded to the prepared substrate with hot bitumen.
2. Hot Bitumen: ASTM D312, Type III steep asphalt having the following characteristics:
 - a. Softening Point 185°F - 205°F
 - b. Flash Point 500°F
 - c. Penetration @ 77°F 15-35 units
 - d. Ductility @ 77°F 2.5 cm
3. Base Flashing Ply: One (1) ply of 40 mil SBS base flashing ply covered by an additional layer of modified bitumen membrane and set in bitumen.
4. Modified Membrane (System Option 1): 100 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat.

Modified Membrane (System Option 2): 110 mil SBS and SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat.
5. Surfacing: Flood coat of hot type III bitumen and ASTM D1863 roofing aggregate consisting of pea gravel
6. Slope: up to 3:12
7. Roofing Aggregate: To conform to ASTM D1863
 - a. Pea Gravel

2.3 BITUMINOUS MATERIALS

- A. Asphalt Primer: V.O.C. compliant, ASTM D41.

- B.** Asphalt Roofing Mastic: V.O.C. compliant, ASTM D4586, Type II.
- C.** Interply Adhesive: ASTM D312, Type III.

2.4 SHEET MATERIALS

- A.** Felt Plies: Fiberglass Felts: ASTM D2178, HPR Type IV
- B.** Base Flashing Ply: 40 mil SBS modified membrane with woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D5147. Properties (Finished Membrane):

- 1.** Tensile Strength (ASTM D5147):
 - a.** 2 in/min. @ $73.4 \pm 3.6^\circ\text{F}$: MD 200 lbf/in CMD 200 lbf/in
- 2.** Tear Strength (ASTM D5147)
 - a.** 2 in/min. @ $73.4 \pm 3.6^\circ\text{F}$ MD 250 lbf CMD 250 lbf
- 3.** Elongation at Maximum Tensile (ASTM D5147)
 - a.** 2 in/min. @ $73.4 \pm 3.6^\circ\text{F}$ MD 4.5% CMD 4.5%

- C.** Modified Flashing Ply (System Option 1): 140 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat, grey granule surfaced.

Modified Flashing Ply (System Option 2): 150 mil SBS and SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat, grey granule surfaced.

- D.** Modified Membrane Properties (Finished Membranes – System Option 1); ASTM D6162, Type III Grade S, 100 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat

- 1.** Tensile Strength (ASTM D5147)
 - a.** 2 in/min. @ $73.4 \pm 3.6^\circ\text{F}$ MD 300 lbf/in CMD 300 lbf/in
- 2.** Tear Strength (ASTM D5147)
 - a.** 2 in/min. @ $73.4 \pm 3.6^\circ\text{F}$ MD 450 lbf CMD 450 lbf

3. Elongation at Maximum Tensile (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 3.0% CMD 3.0%
 4. Low Temperature Flexibility (ASTM D5147): Passes -30°F (-34°C)
- Modified Membrane Properties (Finished Membranes – System Option 2);
ASTM D6162, Type III Grade S, 80 mil SBS & SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) and rubber modified roofing membrane reinforced with a dual fiberglass scrim and polyester mat
1. Tensile Strength (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 450 lbf/in CMD 450 lbf/in
 2. Tear Strength (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 800 lbf CMD 800 lbf
 3. Elongation at Maximum Tensile (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 6.0% CMD 6.0%
 4. Low Temperature Flexibility (ASTM D5147): Passes -30°F (-34°C)

2.5 SURFACINGS

- A. 3/8" pea gravel

2.6 RELATED MATERIALS

- A. Roof Insulation: In accordance with Section 07 22 00.
- B. Roof Insulation Fasteners: In accordance with Section 07 22 00.
- C. Base Sheet: ASTM D4601, Type II; as recommended and furnished by the modified membrane manufacturer.
- D. Nails and Fasteners: Non-ferrous metal or galvanized steel, except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel. Fasteners shall be self-clinching type of penetrating type as recommended by the manufacturer of the deck material. Nails and fasteners shall be flush-driven through flat metal discs of not less than one (1) inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.

- E.** Metal Discs: Flat discs or caps of zinc-coated sheet metal not lighter than twenty eight (28) gauge and not less than one (1) inch in diameter. Form discs to prevent dishing. Bell or cup shaped caps are not acceptable.
- F.** Rust Inhibitive Paint: As recommended and furnished by the membrane manufacturer for mechanical units and other metal surfaces to control and prevent surface rust.
- G.** Urethane Sealant: One part, non-sag sealant as recommended and furnished by the membrane manufacturer for moving joints.
 - 1.** Tensile Strength (ASTM D412) 250 psi
 - 2.** Elongation (ASTM D412) 950%
 - 3.** Hardness, Shore A (ASTM C920) 35
 - 4.** Adhesion-in-Peel (ASTM C920) 30 pli
- H.** Sealant: Single component, 100% solids structural adhesive Tuff Stuff as furnished and recommended by the membrane manufacturer.
 - 1.** Elongation (ASTM D412) 300%
 - 2.** Hardness, Shore A (ASTM C920) 50
 - 3.** Shear Strength (ASTM D1002) 300 psi
- I.** Non-Shrink Grout: Use an all-weather fast setting chemical action concrete material to fill pitch pans.
 - 1.** Flexural Strength (ASTM C78 (modified)) 7 days 1100psi
 - 2.** High Strength (ASTM C109 (modified)) 24 days 8400lbs (3810kg)
- J.** Roof Drains: Drain system as recommended and furnished by the membrane manufacturer.
- K.** Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

- A.** Comply with requirements of Division 01 Section "Common Execution Requirements."

3.2 EXAMINATION

- A.** Verify that deck surfaces and project conditions are ready to receive work of this Section.
- B.** Verify that deck is supported and secured to structural members.
- C.** Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped to drains
- D.** Verify that adjacent roof substrate components do not vary more than [1/4] inch in height.
- E.** Verify that deck surfaces are dry and free of snow or ice.
- F.** Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that wood fiber cant strips, wood nailing strips and reglets are set in place.

3.3 DECK PREPARATION

- A.** Concrete Deck
 - 1.** Concrete Deck: Verify that all surfaces are plane and that it is free from damage and deflection.

3.4 GENERAL INSTALLATION REQUIREMENTS

- A.** Cooperate with manufacturer, inspector and test agencies engaged or required to perform services in connection with installing the roof system.
- B.** Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C.** Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the coal tar modified bituminous roofing system.

- D.** Coordinate installation of roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation with two (2) plies of #15 organic roofing felt set in full moppings of bitumen and with joints and edges sealed with roofing cement. Remove cut-offs immediately before resuming work.
- E.** Asphalt Bitumen Heating: Heat and apply bitumen in accordance with the Equiviscous Temperature (EVT) Method as recommended by National Roofing Contractors Association (NRCA). Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT (plus 5°F at point of application) more than one (1) hour prior to time of application. Determine flash point, finished blowing temperature, EVT, and fire-safe handling temperature of bitumen either from information by manufacturer or by suitable test. Do not exceed recommended temperature limits during bitumen heating. Do not heat to a temperature higher than twenty five degrees (25°F) below flash point. Discard bitumen that has been held at temperature exceeding Finishing Blowing Temperature (FBT) for more than three (3) hours. Keep kettle lid closed except when adding bitumen.
- F.** Asphalt Bitumen Mopping Rate:

 - 1. Interply Mopping: Apply bitumen at the rate of approximately twenty five (25) lb.(11.3kg) of bitumen per roof square.
 - 2. Modified Membrane Mopping: Apply bitumen at the rate of approximately thirty (30) lb (13.6kg). of bitumen per roof square.
- G.** Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- H.** Apply roofing materials as specified by manufacturer's instructions.

 - 1. Keep roofing materials dry before and during application.
 - 2. Do not permit phased construction.
 - 3. Complete application of roofing plies, modified sheet and flashing in a continuous operation.
 - 4. Begin and apply only as much roofing in one day as can be completed that same day.

- I. Cut-Offs (Waterstops): At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering of two (2) plies of #15 organic roofing felt set in full moppings of bitumen with joints and edges sealed and glaze coat the surface of the temporary waterstop.

3.5 VAPOR RETARDER INSTALLATION

- A. Concrete Deck: Install two (2) layers of Type 15 organic felt, each in a layer of hot asphalt at a rate of 25-lbs/100 sqft.
- B. Lap ply sheet ends eight (8) inches (203mm). Stagger end laps twelve (12) inches (304mm) minimum.
- C. Extend plies to the outside edge of the parapet at all perimeter edges, and extend plies two (2) inches (50mm) beyond top edges of cants at wall and roof projections and equipment bases.
- D. Install base flashing ply to all perimeter and projection details. Properly seal all curbs penetrations and perimeter, prior to application of remaining roof.

3.6 INSULATION INSTALLATION

- A. Deck type: Concrete
- B. Installation: Install one (1) layer of 3" Polyisocyanurate (ISO), and install one (1) new layer of 1/2" HD asphalt coated fiberboard.
 - 1. Polyisocyanurate (ISO) insulation thickness 3", Board size 4'x4'. The ISO insulation will be fully adhered in a layer of hot asphalt at a rate of 25-lbs/100/sqft. The high-density fiberboard will be fully adhered in twenty-five (25) lbs/100 sqft of hot Type III asphalt, staggering the seams above the ISO insulation. The fiberboard layer into place with the seams placed tight together.

3.7 FELT PLY INSTALLATION

- A. Fiberglass Plies: Install two (2) HPR fiberglass ply sheets in twenty five (25) lbs (11.3kg) per square of bitumen shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof. Do not step on felt rolls until asphalt has cooled, fish mouths should be cut and patched.
- B. Lap ply sheet ends eight (8) inches (203mm). Stagger end laps twelve (12) inches (304mm) minimum.
- C. Lightly broom in fiberglass plies to assure complete adhesion.

- D. Extend plies two (2) inches (50mm) beyond top edges of cants at wall and roof projections and equipment bases.
- E. Install base flashing ply to all perimeter and projection details after membrane application.

3.8 MODIFIED MEMBRANE APPLICATION

- A. Solidly bond the modified membrane to the base layers with specified asphalt at the rate of twenty-five (25) to thirty (30) lbs. (11-13kg) per 100 square feet.
- B. The modified membrane roll must push a puddle of asphalt in front of it with asphalt slightly visible at all side laps. Exercise care during application to eliminate air entrapment under the membrane.
- C. Apply pressure to all seams to ensure that the laps are solidly bonded to substrate.
- D. Install subsequent rolls of modified membrane across the roof as above with a minimum of four (4) inch (101mm) side laps and eight (8) inch (203mm) end laps. Stagger the end laps. Apply the modified membrane in the same direction as the previous layers but stagger the laps so they do not coincide with the laps of the base layers.
- E. Apply asphalt no more than five (5) feet (1.5m) ahead of each roll being embedded.
- F. Extend membrane two (2) inches (50mm) beyond top edge of all cants in full mopping of the specified asphalt [as shown on the drawings].

3.9 FLASHING MEMBRANE INSTALLATION

- A. Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
- B. Prepare all walls, penetrations, expansion joints [and where shown on the drawings] to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
- C. Use the modified membrane as the flashing membrane. Adhere to the underlying base flashing ply with specified asphalt unless otherwise noted in these specifications. Nail off at a minimum of eight (8) inches o.c. from the finished roof at all vertical surfaces.
- D. Solidly adhere the entire sheet of flashing membrane to the substrate.

- E.** Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and fiberglass mesh.
- F.** Coping Cap [Detail No. MBH-20]:
1. Minimum flashing height is eight (8) inches. Maximum flashing height is twenty-four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
 3. Attach tapered board to top of wall.
 4. Install base flashing ply covering entire wall and wrapped over top of wall and down face with six (6) inches on to field of roof and set in hot asphalt. Nail membrane at eight (8) inches o.c.
 5. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all seams and allow to cure and aluminize.
 6. Install continuous cleat and fasten at six (6) inches o.c. to outside wall.
 7. Install new metal coping cap hooked to continuous cleat.
 8. Fasten inside cap twenty-four (24) inches o.c. with approved fasteners and neoprene washers through slotted holes which allow for expansion and contraction.
- G.** Surface Mounted Counterflashing [Detail No. MBH-22]:
1. Minimum flashing height is eight (8) inches. Maximum flashing height is twenty-four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
 3. Install base flashing ply covering wall set in bitumen with six (6) inches on to field of the roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply

a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.

5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall.
6. Secure counterflashing set on butyl tape above flashing at eight (8) inches o.c. and caulk top of counterflashing.

H. Manufactured Wall Panel W/Modified Roof/Flashing (Slip Flashing)
[Detail No. MBH-26]:

1. Minimum flashing height is eight (8) inches. Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all plies over a cant a minimum of two (2) inches.
3. Install base flashing ply covering wall with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install manufacturer's standard hat channel into the top of the modified membrane to act as a termination bar.
6. Install hat channels at twenty-four (24) inches o.c. vertically spaced up the wall.
7. Install the uppermost hat channel at the bottom edge of the coping cap. Insert rigid insulation between the hat channels. Place manufacturer's standard seam tape on top of all hat channels.
8. Fasten the first manufactured wall panel vertically plumb and fasten every six (6) inches o.c.
9. Install adjoining panels by engaging the opposing interlocking seam and fastening as described above.
10. Complete inside and outside corners by installing pre-fabricated corners or job site braking a full width panel to accommodate the corner, so that the sides engage the lock of the panels to the corner areas.

11. Trim excess seam tape and seam raw edges with manufacturer's recommended sealant.
12. Fasten slip flashing to existing coping cap with a waterproof rivet every twenty-four (24) inches o.c. to act as a counterflashing over the manufactured wall panel.

I. Area Divider [Detail No. MBH-31]:

1. Minimum curb height is eight (8) inches. Prime vertical curb at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies over a cant a minimum of two (2) inches.
3. Install base flashing ply covering curb set in bitumen with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Attach top of membrane to top of curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install pre-manufactured cover. Fasten sides at twenty four (24) inches o.c. with fasteners and neoprene washers through slotted holes. Furnish all joint cover laps with butyl tape between metal covers.

J. Equipment Support [Detail No. MBH-32]:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb set in bitumen with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Attach top of membrane to top of curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.

5. Install pre-manufactured cover. Fasten sides at twenty four (24) inches o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.

K. Curb Detail/Air Handling Station [Detail No. MBH-33]:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb set in bitumen with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.

L. Exhaust Fan [Detail No. MBH-36]:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply installed over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.

5. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.

M. Passive Vent/Air Intake [Detail No. MBH-37]:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb with six (6) inches on to the field of the roof.
4. Install a second ply of modified flashing ply installed over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install passive vent/air intake over the wood nailers and flashing to act as counterflashing. Fasten per manufacturers recommendations.

N. Roof Drain [Detail No. MBH-40]:

1. Plug drain to prevent debris from entering plumbing.
2. Taper insulation to drain minimum of forty-eight (48) inches from center of drain.
3. Run roof system plies over drain. Cut out plies inside drain bowl.
4. Set lead/copper flashing (thirty (30) inch square minimum) in $\frac{1}{4}$ inch bed of mastic. Run lead/copper into drain a minimum of two (2) inches. Prime lead/copper at a rate of one hundred (100) square feet per gallon and allow to dry.
5. Install base flashing ply (forty (40) inch square minimum) in bitumen.
6. Install modified membrane (forty eight (48) inch square minimum) in bitumen.
7. Install clamping ring and assure that all plies are under the clamping ring.

8. Remove drain plug and install strainer.

O. Plumbing Stack [Detail No. MBH-50]:

1. Minimum stack height is twelve (12) inches.
2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
3. Prime flange of new sleeve. Install properly sized sleeves set in (1/4) inch bed of roof cement.
4. Install base flashing ply in bitumen.
5. Install membrane in bitumen.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Turn sleeve a minimum of one (1) inch down inside of stack.

P. Heat Stack [Detail No. MBH-51]:

1. Minimum stack height is twelve (12) inches.
2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
3. Prime flange of new sleeve. Install properly sized sleeves set in (1/4) inch bed of roof cement.
4. Install base flashing ply in bitumen.
5. Install modified membrane in bitumen.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Install new collar over cape. Weld collar or install stainless steel draw band.

Q. Pitch Pocket Umbrella [Detail No. MBH-53]:

1. Run all plies up to the penetration.

2. Place the pitch pocket over the penetration and prime all flanges.
3. Strip in flange of pitch pocket with one (1) ply of base flashing ply. Extend six (6) inches onto field of roof.
4. Install second layer of modified membrane extending nine (9) inches onto field of the roof.
5. Fill pitch pocket half full with non-shrink grout. Let this cure and top off with pourable sealant.
6. Caulk joint between roof system and pitch pocket with roof cement.
7. Place a watershedding type bonnet over the top of the pitch pocket and clamp the top with a drawband collar. Caulk the upper edge of the band with an elastomeric sealant.

3.10 APPLICATION OF SURFACING

A. Aggregate Surfacing:

1. Apply surfacing materials in the quantities specified (five hundred (500) lbs. (226kg) per square for aggregate. Uniformly embed aggregate in a flood coat of hot Type III bitumen at a rate of 60-70 lbs/100 sqft coverage after flashings, tests, repairs, and corrective actions have been completed and approved by the primary membrane manufacturer and Owners Representative.
2. Aggregate shall be dry and placed in a manner required to form a compact, embedded overlay. To aid in proper embedment, lightly roll aggregate provided that there is no damage to the roofing membrane.

B. Reflective Coating:

1. Allow all cold applied mastics and coating to properly dry and cure before installing the aluminum coating.
2. Paint all exposed membrane with manufacturer's non-fibrated aluminum paint installed at a rate of one-half (1/2) gallon per square per coat. This shall be a two-coat application with the finished stroke in one direction.

3.11 FIELD QUALITY CONTROL

- #### **A.**
1. Perform field inspection as required under provisions of Division 01 Section Quality Requirements.

- B.** Correct defects or irregularities discovered during field inspection.
- C.** Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification should also be on site at all times.

3.12 CLEANING

- A.** Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B.** In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this Section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.
- C.** Repair or replace defaced or disfigured finishes caused by work of this Section.

3.13 CONSTRUCTION WASTE MANAGEMENT

- A.** Remove and properly dispose of waste products generated during roofing procedures. Comply with requirements of authorities having jurisdiction.

3.14 FINAL INSPECTION

- A.** At completion of roofing installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B.** Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C.** The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor.
- D.** If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.
- E.** Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

- F.** Notify the Owner upon completion of corrections.
- G.** Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- H.** Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.15 DEMONSTRATION AND TRAINING

- A.** At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
 - 1.** Roof troubleshooting procedures.
 - 2.** Notification procedures for reporting leaks or other apparent roofing problems.
 - 3.** Roofing maintenance.
 - 4.** The Owner's obligations for maintaining the roofing warranty in effect and force.
 - 5.** The Manufacturer's obligations for maintaining the roofing warranty in effect and force.

END OF SECTION 07 52 00 - MODIFIED BITUMINOUS MEMBRANE ROOFING
HOT APPLIED

APPENDIX A

MODIFIED MEMBRANE MANUFACTURER SERVICES

1. The modified membrane roofing manufacturer's representative, and roof installation progress and quality inspector, shall be the same person and shall meet the following qualifying requirements:
 - .1 Shall have been directly employed by the manufacturer for a minimum of five years.
 - .2 Shall have the back-up if so required, of a field manager with a minimum of 15 years' experience of full-term employment with the same membrane roofing manufacturer.
2. To better serve the Building Owner's needs and thus informed roofing decision making, the same roofing membrane manufacturer's representative shall meet these additional qualifying requirements:
 - .1 Initially determine roofing needs and problems.
 - .2 Conduct detailed visual roof inspections to determine these needs.
 - .3 Perform core sample analysis as (required).

- .4 Schedule laboratory analysis (as required)
- .5 Provide photographic records (as required).
- .6 Provide infra-red (thermal-graphic) analysis (as required).
- .7 Prepare detailed scaled roof plan diagrams.
- .8 Provide all above findings in a detailed roof report compilation to the Building Owner (accessed via the web as required) as well as in hard copy. This shall include, but not be limited to the following (these are minimum requirements):-
 - .1 Make maintenance and replacement recommendations.
 - .2 Assist in establishing priorities.
 - .3 Prepare planned roof management program.
 - .4 Recommend systems and materials based upon roof life-cycle costs, expected value received, regional weather conditions and long-term warranty requirements.
- .9 To better serve the Building Owner's value received with regard to the lead up to the roofing contract, all stages of the project, and follow through to completion and beyond; the same roofing membrane manufacturer's representative shall provide the following:
 - .1 Write detailed specifications with scaled diagrams.
 - .2 Assist in approved, quality roofing contractor selections.
 - .3 Conduct pre-bid, on-site meetings with prospective bidding contractors.
 - .4 Review bids received with the Building Owner to ensure value received.
 - .5 Conduct a pre-project start-up meeting with the Building Owner and Contractor to ensure that all aspects of the project are understood and are acceptable to all parties concerned.
 - .6 Shall inspect roof installation roof work in progress a minimum of once a day for each day's work undertaken to ensure full compliance with the specifications. An inspector temporarily employed by the roofing membrane manufacturer is not acceptable.
 - .7 Shall provide a weekly report showing details for each day's work undertaken, These details shall include pictures and notes for each stage of the work, including all layers of the built up roof system. This report shall be provided in an e-mail format.

- .8 Shall be on call to appear at the work site within 3 hours of being summoned by the Building Owner or Roofing Contractor.
- .10 The roofing membrane manufacturer shall issue to the Building Owner a long-term, 20 year or 25 year No Dollar Limit, non-prorated, leak-free guarantee for the modified bitumen membrane roof system.
- .11 The roofing membrane manufacturer shall conduct annual follow-up inspections to ensure integrity of the roof system and maintenance (if required).
- .12 The modified bitumen membrane shall exceed the standards as listed in Appendix B (next).
 - .1 The test results for such will only be acceptable from an accredited, industry, recognized testing laboratory. The membrane manufacturer's own test results, spec/data sheets or brochures are not acceptable.
- .13 The modified bitumen membrane manufacturer shall provide and prove the recognized test for proper rubber/asphalt dispersion in a polymer modified bituminous membrane (appendix C) last.
- .14 The modified bitumen membrane shall be proved to have been in continuous manufacture for a minimum of 30 years.
- .15 The alternate modified bitumen membrane manufacturer or supplier shall be the actual membrane manufacturer. Brand naming a membrane that has been manufactured by another manufacturer other than the alternate manufacturer is not acceptable.

APPENDIX B

MODIFIED MEMBRANE MINIMUM PERFORMANCE PARAMETERS

The modified bitumen membrane to be employed shall be compliant with CGSB 37-GP-56M standards and meet the following performance criteria:

1. It shall be high strength, ultraviolet resistant membrane designed for use as the top waterproofing and reinforcement layer of the built-up roofing system, the base two plies of which are fibreglass felts.
2. It shall be a minimum of 80 mils in thickness with dual fibreglass and polyester scrim sandwiched between a compound of high penetration index asphalt. The asphalt will be modified with a blend of SBS & SIS rubber.
3. The minimum percentage of the SBS & SIS blend shall be 20%*.
** Evenly Dispersed Rubber: Refer to attached Appendix C for "Test for Proper Rubber/Asphalt Dispersion in Polymer Modified Bituminous Products"*
4. The bitumen portion shall be entirely asphaltic hydrocarbons with no plasticizers, coal tar pitch or other ecologically harmful fractions.
5. Physical properties.
 - a. **Tensile strength** at 77 degrees Fahrenheit (ASTM 5147)
Maximum load
Machine direction: 450 lbf/in.
Cross machine direction: 450 lbf/in.
 - b. **Low Temperature Flexibility** (ASTM D5147)
Passes at minus -30°F (-34°C)
 - c. **Tear Strength** at 77 degrees Fahrenheit (ASTM 5147)

Machine direction: 850 lbs
Cross Machine direction: 850 lbs
 - d. **Elongation** (ASTM D5147)

Machine direction: 3.0%
Cross Machine direction: 3.0%
 - e. **Recycled Content**
LEED NC. 2.2
Post Consumer Recycled Content: 5%

Pre-consumer Recycled Content: 20%

APPENDIX C

TEST FOR PROPER RUBBER/ ASPHALT DISPERSION IN POLYMER MODIFIED BITUMINOUS MEMBRANES

Ultra-Violet Analysis

Criteria for Proper Mixing

For a material to be considered a proper blend, it must show certain distinguishing qualities under ultra-violet microscopy analysis. The polymer, fluorescing region, must be a continuous phase and take up the majority of the analysed area. The asphalt, non-fluorescing region, must be completely dispersed throughout the continuous polymer region and be of a small and uniform dispersion. The blend will not be considered adequately mixed if the phase shows large aggregations of either polymer or bitumen suspended throughout the main continuous phase, or if the continuous phase does not show fluorescence and in fact is comprised of non-polymeric material.

Filled or further modified blends may show some aggregation of material due to the specific reflective qualities of the additives. These results should be recorded and be used for complete and accurate analysis of the blends.

Sample and Test Procedure

The samples should be taken randomly from a stock roll of material. An analysis of the material should be run for the above criteria of blending. The compound shall be removed from the reinforcing fabric by scraping a cold sample. The sample should be cooled to at least negative 40 degrees Fahrenheit before removal should be attempted. An initial analysis of the sample should be done before the coating is removed, but the examined removed coating should be the criteria for the actual analysis of the coating.

The product should first be analysed under 20% filtered UV light and 10 power lens to avoid damaging the sample by the intense UV light. If the sample is felt to be inadequately mixed, the material will be rejected.

Results and Reports

The blend should be examined for all above criteria in the prescribed manner. Any non-compliant and compliant qualities of the blend should be noted and recorded for analysis both verbally and by photograph.

Job Site Verification

The Owner's representative reserves the right to spot check material on the job site and test the material as stated above. Any material found not in compliance will be cause to stop the project and remove all of that manufacturer's material from the job site at the expense of the

manufacturer and/or contractor. The Owner's representative will have the right to require material be used from a manufacturer that can meet the testing requirement.

Test Procedure for Ultra-Violet Analysis

Criteria for Proper Mixing

For a material to be considered a proper blend, it must show certain distinguishing qualities under ultra-violet microscopy analysis. The polymer, fluorescing region, must be a continuous phase and take up the majority of the analysed area. The asphalt, non-fluorescing region, must be completely dispersed throughout the continuous polymer region and be of a small and uniform dispersion. The blend will not be considered adequately mixed if the phase shows large aggregations of either polymer or bitumen suspended throughout the main continuous phase, or if the continuous phase does not show fluorescence and in fact is comprised of non-polymeric material.

Filled or further modified blends may show some aggregation of material due to the specific reflective qualities of the additives. These results should be recorded and be used for complete and accurate analysis of the blends.

Sample and Test Procedure

The samples should be taken at the proposed completion time for blending on the batch sheet. An analysis of the material should be run for the above criteria of blending. Samples should be collected in small aluminium containers adequately sized for use under the UV microscope. Samples that contain high quantities of solvent should be dried in an air-circulated oven prior to analysis. If the product is already coated onto a scrim the modified bitumen should be removed by scraping a cold sample. The sample should be cooled to at least negative 40 degrees Fahrenheit before removal should be attempted. An initial analysis of the sample should be done before the coating is removed, but the examined removed coating should be the criteria for the actual analysis of the coating.

The product should first be analysed under 20% filtered UV light and 10 power lens to avoid damaging the sample by the intense UV light. If the sample is felt to be inadequately mixed the batch is held for continued mixing. Only after proper dispersion, in correlation to the above criteria, will the batch be considered properly mixed and okayed for shipping or dropping on membranes.

Results and Reports

The blend should be examined for all above criteria in the prescribed manner; any non-compliant and compliant qualities of the blend should be noted and recorded for analysis both verbally and visually by photograph, if necessary.

