



**REQUEST FOR TENDER**

**MEMBER & GUEST SERVICES BUILDING ROOF  
REPLACEMENT**

**RFT # 22 (2018-07)**

**ISSUE DATE: 2018-07-19**

**NAME OF TENDERER:** \_\_\_\_\_

**AMOUNT OF TENDER:** \$ \_\_\_\_\_

**SECTION I**  
**INSTRUCTION TO TENDERERS**

**TENDERER'S CHECK SHEET**  
(To be enclosed in the Tender Envelope)

**This tender checklist is provided for the convenience of the Bidders.  
Bidders are expected to read and understand the entire tender document.**

BEFORE SEALING THE ENVELOPE, PLEASE CHECK THAT THE FOLLOWING THINGS HAVE BEEN DONE:

1. (a) Has your tender been signed by the proper authorized signing officer(s) of your firm?  
(b) Has your corporate or individual seal been affixed over or alongside the signatures of the officers?

NOTES:

1. Your tender will be informal and will be disqualified if the foregoing points have not been complied with.
2. If further clarification is needed, Mr. Peter Vasilopoulos, Supervisor, Purchasing & Supply, of the Toronto Zoo should be contacted at 416-392-5916.

**INFORMATION FOR TENDERERS**

**DUE DATE:**

Wednesday, 2018-08-08, at 1200 hours (noon, local time) delivered as indicated below clearly marked "TENDER #22 (2018-07)".

**DELIVERY ADDRESS:**

The delivery address is Toronto Zoo Administrative-Support Centre, 361A Old Finch Avenue, Gate A (west of Meadowvale Road), Toronto, Ontario.

**MAILING ADDRESS:**

Toronto Zoo, 361A Old Finch Avenue, Toronto, Ontario, M1B 5K7.

**TENDERER'S CHECKLIST**

The following must be completed and all completed Tender Forms must be enclosed (except Drawings) in a sealed envelope for Tender submission.

Front Hard Cover Sheet – Name of Tenderer.

**Section II TENDER FORMS**

- Form 1 Tender Form & Appendices (see instructions to Tenderers).  
Please ensure the following areas are completed:
- Article 1. Pg. 1
  - Article 5. Pg. 3
  - Article 6.1, Pg. 5
  - Article 7, Pg. 5
  - Pg. 7, Sign & Seal
  - All pages in Appendix I (Due with Tender on stipulated closing date)
  - All pages in Appendix II (Due 24 hours after stipulated closing date)
  - All pages in Appendix III (Due 24 hours after stipulated closing date)
  - All pages in Appendix IV (if applicable) (Due 24 hours after stipulated closing date)
  - All pages in Appendix V (if applicable) (Due 24 hours after stipulated closing date)
  - All pages in Appendix VI (if applicable) (Due 24 hours after stipulated closing date)
  - All pages in Appendix VII (if applicable) (Due 24 hours after stipulated closing date)
- Form 2 **Statutory Declaration of Verification** – To be completed as per Article 12 of Instructions to Tenderers.
- Form 3 **Bid Bond** – To be signed and sealed by both the Tenderer and its Surety Company as per Article 13 of Instructions to Tenderers.
- Form 4 **Agreement to Bond** – To be signed and sealed by a Surety Company as per Article 13 of Instructions to Tenderers.

Note: The form and content of this Tender Package have been substantially revised from previous years. Tenderers should govern themselves accordingly in reviewing and completing the Tender Package and follow closely the instructions given in the package.

**1.0 NATURE OF WORK:**

1.1 Tenders are invited for all that is required for the Roof Replacement at the Member & Guest Services Building (hereinafter called "the Work"), for the Board of Management of the Toronto Zoo. Scope of work includes but is not limited to the following:

1.1.1 Supply all labour, tools, materials and equipment to complete the work as outlined in the quotation documents, drawings and specifications.

1.1.2 All work to be completed in accordance with applicable codes (e.g. Building Code, Electrical Code, Fire Code, etc.)

1.1.3 All measurements to be site verified.

**1.1.4 Owner Occupancy**

- a. Owner will occupy premises during entire construction period for execution of normal operations.
- b. Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

**1.1.5 Contractor Use of Premises**

- a. Contractor to limit use of premises for Work, for storage, and access.
- b. Coordinate use of premises under direction of Owner and Consultant.
- c. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

**1.1.6 General Site Requirements**

- a. Temporary Barriers, enclosures and signage will be highly enforced given use of property.
- b. Contractor to ensure safety and proper execution of public routing; ensuring temporary access to fire exists if and when they are affected as part of Work.
- c. Obtain Construction/Building Permit and sidewalk/roadway occupation permits as required by local municipality.
- d. Determine nature and extent of all site services above and below grade prior to commencement of Work.
- e. Coordination of trades will be responsibility of Contractor to ensure work is completed as soon as possible. Provide winter protection and heating as required to perform Work if required and as specified.
- f. Supply, set-up, maintain and remove scaffolding, man-lift platforms and/or swing-stages during performance of Work as required to access work areas. If scaffolding is to be used,

Contractor to provide complete shop drawings bearing seal of a Professional Engineer, licensed to practice in Place of Work. Work to include review and approval of installed scaffolding by Designer. Allowance should be made for access to all elevations of building.

- g. No public access to Work area to be allowed. Ensure access to fire exits are maintained and hoarded through Work area. Pedestrian access along sidewalks must be maintained as per Owner's requirements. No areas of access to or around building are to be restricted without approval of Owner.
- h. Install temporary protection at all locations of Work, as required to ensure safe, clean, orderly removal and disposal work, and to provide protection for all interior and exterior building components, vehicles, pedestrians and occupants.
- i. Provide temporary support to existing structural and cladding components during performance of work if required.
- j. Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.
- k. Dispose of all materials at landfill site authorized by authorities having jurisdiction.

#### 1.1.7 Site Specific Requirements

- a. No Smoking Policy: Smoking is strictly prohibited at project site; anywhere on premises and also on roof top.
- b. Access to Roof: Roof access must be on exterior of building via contractor assembled scaffolding, and be fully secured with locked fencing.

#### 1.1.8 Protection of Roofs

- a. Protect existing roof systems from possible damage during performance of work required by this contract, including transportation across existing roof areas.
- b. Provide protection within area of work where materials, equipment, or heavy tools are placed on or transported across roof surface.
- c. Protection to consist of:
  - 1. Supply and loose lay a continuous layer of clean 6 mil polyethylene slip sheet over existing roof system. Slip sheet to be a minimum 2.44m (8'-0") wide with minimum 457mm (1'-6") overlaps at end joints.
  - 2. Supply and loose lay a continuous layer of minimum 25mm (1 .0") thick, clean extruded polystyrene insulation centered over polyethylene slip sheet.
  - 3. Supply and loose lay a continuous layer of minimum 13mm (0.5") thick, clean plywood sheathing.
  - 4. Provide additional protection over newly installed roof sections where required for temporary storage or transportation of materials, equipment, or heavy tools.

### 1.1.9 Scope of Work: Low Slop Roof Replacement

On Roof Area 2.5: Remove existing roof system components, projection and perimeter flashings, and old appurtenances down to existing concrete roof deck in preparation for installation of a new roof system. Replacement roof work to be in accordance with Section 07531:

- a. Review surface of exposed concrete deck for damage and deterioration that may impact new roof system installation. Repair concrete decking with quick dry mortar mix as required.
- b. Install new wood blocking and 13mm (0.5") plywood to match where required and where indicated on detail drawings.
- c. Prime all exposed wood, concrete, gypsum roof board and metal surfaces to receive new vapour retarder and flashings membrane and flashings.
- d. Install self adhered modified bitumen vapour retarder membrane across field of roof.
  - i. Install self adhered modified bitumen tie-in flashings along perimeters, curbs, projections, and where indicated on detail drawings.
- e. Install a layer of flat 51mm (2.0") polyisocyanurate base insulation, loose laid.
- f. Prime all exposed wood surfaces where required to receive new EPDM membrane flashings with EPDM primer.
- g. Mechanically fastened EPDM reinforcement strips along base of walls, parapets, perimeters, sleepers, and curb projections.
- h. Loose lay a single ply of new 1.5mm (60mil) non-reinforced EPDM membrane with factory applied tape seams over prepared substrate.
- i. Install EPDM membrane flashings up verticals, curbs, and projections in full application of EPDM adhesive with splice tape and lap sealant where required.
- j. Before ballast installation, provide a continuous layer of membrane protection mat over new EPDM membrane, loose laid with overlapping seams.
- k. Install and broadcast an even layer of round river stone over exposed areas of EPDM field membrane.
- l. Install new prefinished sheet metal flashings and trim with required hook strips

### 1.1.10 Scope of Work: Low Slope Roof Retrofit

On Roof Areas 2.6 and 2.7: Supply and install all labour, plant, equipment, and materials for a new EPDM retrofit roof system over top of prepared existing substrate. Retrofit roof work to be in accordance with Section 07531 and to include, but not be limited to:

- a. Perform infrared thermal scan to determine location of wet and deteriorated sections of existing BUR roof system to be cut out and repaired. Mark-up findings on roof in logical rectangular shapes using paint.
  - i. Carry a cost of \$2,500 plus applicable taxes in Bid Price to perform an infrared thermal scan on roof areas 2.6 and 2.7, over entire each roof area, to determine location of wet and/or deteriorated sections of existing roof system to be cut-out and replaced prior to installation of new roof.
  - ii. Allow in Bid Price for replacement of existing roof system with new compatible materials to restore existing on 20% of each roof area. Provide Unit Price to add to or remove from Contract for additional existing roof system component replacement, per square foot.
- b. Power vacuum existing gravel surface of mopped B.U.R. membrane to remove loose gravel and scrape high spots flush.
- c. Remove and dispose of loose gravel and debris, existing projection and perimeter flashings, and old appurtenances to an appropriate site.
- d. Install new wood blocking and plywood at perimeters and curbs as required and where indicated on detail drawings.
- e. Prime all exposed wood, concrete, gypsum board and metal surfaces to receive new membrane and flashings.
- f. Install 13mm (0.5") siliconized gypsum roof cover board in ribbons of polyurethane roofing adhesive.
- g. On Roof Area 2.7: Mechanically fasten 13mm (0.5") siliconized gypsum roof cover board to wood plank decking.
- h. Prime all exposed wood surfaces where required to receive new EPDM membrane flashings with EPDM primer.
- i. Mechanically fastened EPDM reinforcement strips along base of walls, parapets, perimeters, sleepers, and curb projections.
- j. Fully adhered a single ply of 1.5mm (60mil) non-reinforced EPDM membrane with factory applied tape seams in EPDM membrane adhesive over cover board.
- k. Install EPDM membrane flashings up verticals, curbs, and projections in full application of EPDM adhesive with splice tape and lap sealant where required.
- l. Install new prefinished sheet metal flashings and trim with required hook strips

#### 1.1.11 Scope of Work: Miscellaneous Roof Repairs

On Roof Area 2.8: Perform miscellaneous roof repairs as listed below and as directed on site by Consultant. Repair Work to include, but not be limited to:



- a. Debris: Remove and dispose of dirt, debris, and garbage from roof area, scupper drains, rain gutters, and downspouts.
  - i. Sweep or vacuum accumulated debris from roof area.
  
- b. Rain Gutters & Downspouts: Ensure all rain gutters and downspouts are clear of debris, unobstructed, and free flowing.
  - i. Replace missing or damaged gutter straps, brackets, and downspout hangers with new to match existing.

Replace missing or damaged gutter and downspout fasteners with new.
  - ii. Replace missing or damaged sections of existing gutters or downpipes with new to match existing.

Ensure downpipes have min. 610mm (2'-0") kick-outs away from building at grade level.
  
- c. New Sealant: Install new sealant where directed using Section 07920 as a guideline.
  - i. Remove and dispose of existing sealant before new sealant application.

#### 1.1.12 Scope of Work: Review & Repair of Corroded Metal Deck

- a. At Exposed Metal Roof Deck Sections: Review and examine surface of exposed metal roof deck with Consultant to determine level of deck corrosion and corrective action required.
  
- b. Areas With Severe Corrosion: Roof deck that exhibits pitting, holes, and/or penetrations must be replaced with new metal decking before roof installation may proceed. Small areas may be overlaid with new metal deck of matching size and profile after painting of existing metal as described below. Large areas required engineered shop drawing to determine attachment and design load requirements.
  
- c. Areas With Light to Moderate Corrosion: Where pitting of base metal does not exceeding 35% of deck thickness, metal roof deck may be cleaned, primed and painted with a two coat application.
  - i. Clean exposed metal surfaces to be painted by removing all loose paint, rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances.
  - ii. Power vacuum and/or wipe with clean cloths, flanges, webs, and ribs clear of all dust and debris. Do not use compressed air tools. Only use leaf-type blowers with approval of Consultant.
  - iii. Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces to original condition.
  - iv. Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil, and solvents before primer coat is applied and between applications of remaining coats. Apply primer or paint as soon as possible after cleaning

and before deterioration occurs.

- v. Sand and dust between coats as required to provide adequate adhesion for next coat and to remove visible defects.
  
  - vi. Apply one prime coat to prepared metal roof deck areas. Primer coat to be:
    - 1. Devran 205 Epoxy Primer by ICI Devco Coatings,
    - 2. Kem-Bond HS Rust Inhibitive Metal Primer (B50AZ8) by Sherwin Williams,
    - 3. Glid-Guard Metal Primer 4570 by Glidden,
    - 4. or Consultant approved equal to above.
  
  - vii. Apply two finish coats to exposed deck area after primer is dry. Finish coat to be:
    - 1. Devflex 4216HP Acrylic Semi-gloss Enamel by ICI Devco Coatings,
    - 2. Industrial Enamel (B54W101) by Sherwin Williams,
    - 3. Glid-Guard Alkyd Industrial Enamel 4550 by Glidden,
    - 4. or Consultant approved equal to above.
  
  - viii. Apply paint by brush, roller, or airless sprayer. Conform to Manufacturer's application instructions unless specified otherwise.
  
  - ix. Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
  
  - x. Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- 1.1.13 Clean the work area remove all debris from site on a daily basis. A thorough cleanup of the work area is to be undertaken upon completion of the work. This includes a complete sweeping of the area using a magnet to pick up metal debris.
- 1.1.14 The contractor is required to provide closeout documents including but not limited to as built drawings, warranty, and inspection certificates.
- 1.1.15 The contractor is to notify the Toronto Zoo upon completion of the work. The work is to be reviewed and approved by Toronto Zoo prior to acceptance of the work.
- 1.1.16 This is an occupied site and normal operations must be maintained during performance of work. Take proper care to avoid unnecessary noise, clatter or obstruction in corridors, walkways, sidewalks, and roadways. Do not interfere with use or safe passage to and from building and adjacent public sidewalks and roads. Do not unreasonably encumber site with materials or equipment. Where excessive noise or obstruction is in certain instances unavoidable, advise The Toronto Zoo ahead of time and make suitable arrangements.
- 1.1.17 Perform Work with least possible interference or disturbance to occupants, public and normal use of premises, roadways, parking areas, sidewalks, alleys, or passageways.
- 1.1.18 Provide all protection necessary or as required by local by-laws including but not limited to: hoarding, covered walkways, guard rails, barriers, night lights, sidewalk or curb protection and

warning notices in locations where renovation and alteration work is adjacent to areas used by building occupants or public.

- 1.1.19 Take all necessary precautions to keep dust, dirt, and debris to an acceptable level as directed by The Toronto Zoo and Consultant. Comply with all laws, ordinances, rules and regulations relating to work in connection with above.
- 1.1.20 Where work is performed adjacent to air intakes, The Toronto Zoo must be notified so that appropriate measures can be taken.
- 1.1.21 Provide and maintain temporary ladders required to perform work. Ladders to be strongly constructed and to comply with all requirements of safety authorities having jurisdiction over work. All ladders to be secured and used only by methods approved by Authorities.
- 1.1.22 Provide all required scaffolding necessary to perform work. Erect scaffolding independent of walls. Construct, maintain and use scaffolding in accordance with CAN/CSA-S269.2M, Access Scaffolding for Construction Purposes.
- 1.1.23 Enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction or Toronto Zoo, at no additional cost to Toronto Zoo.
- 1.2.24 Failure to comply with verbal or written instructions or orders from Ministry of Labour inspector or other authorities as well as Toronto Zoo regarding safe work practices or provision of specified requirements under Act to be considered non-compliance with Contract.

The Contractor is responsible for all pricing and all other arrangements with their subcontractors as required. Work is to commence on **Tuesday, 2018-09-04 and all work must be completed by 2018-10-19.**

1.2 In these Instructions

- (i) **“Addenda” or “Addendum”** means a document containing additional information or changes to the Tender Call issued by the Toronto Zoo prior to the Closing Date;
- (ii) **"authorized", "directed", "required", "requested", "approved", "ordered", "sanctioned", and "satisfactory", unless some other meaning is obvious from the context,** mean respectively authorized, directed, required, requested, approved, ordered, or sanctioned by or satisfactory to the Chief Operating Officer;
- (iii) **“Bid”** means the Form of Tender, Information for Bidders, General Conditions, or in the Plans, Drawings, Profiles, Specifications, all addenda or Statutory Declarations forming part of the Contract
- (iv) **"Board Solicitor"** means the person for the time being filling the office of Solicitor for the Board, or the person then acting as such;
- (v) **"Bulk Tender Price", "Contract" and "Contract Documents"** have the meanings set out therefore in clauses (i) and (iii) of paragraph 2.0 of the Tender Form;
- (vi) **Chief Operating Officer"** means the person for the time being filling the office of Chief Operating Officer of the Board or the person then acting as such;

- (vii) **"City" or words "the City"** means the City of Toronto;
- (viii) **"Consultant"** means the consultant for the Work;
- (ix) **"Contract"** means and includes the agreement to do the work entered into with the Board of Management of the Toronto Zoo, the Bonds or Security, the Specifications, the General Conditions, the Plans, Details and Profiles, the Drawings, the Tender and all other documents referred to or connected with the said agreement;
- (x) **"Contract Price"** means the price payable under the Contract to the Contractor, being the Bulk Tender Price eventually accepted by the Board of Management of the Toronto Zoo subject to any changes pursuant to the General Conditions;
- (xi) **"Contractor", or a pronoun in place thereof**, means the person or persons or corporation who have undertaken to carry out the Contract;
- (xii) **"Council"** means the Council of the City of Toronto;
- (xiii) **"Drawings"** means the Drawings included as Section V of the Tender Package;
- (xiv) **"Fair Wage Officer"** means the person for the time being filling the position of Manager, Fair Wage and Labour Trades Office, (416)392-7300 of the City of Toronto, or the person then acting as such;
- (xv) **"General Conditions"** means the General Conditions included as Section III of the Tender package;
- (xvi) **"Inspector"** means an inspector for the Board acting under the direction of the Chief Operating Officer;
- (xvii) **"Inspection Costs"** shall mean the payroll costs of the Board's inspectors plus overhead, or in the case where a consulting engineer is employed, the charges rendered for his/her services to the Board.
- (xviii) **"Plans"** means all plans, profiles, drawings, sketches, or copies thereof exhibited, used or prepared for or in connection with the work embraced under the Contract
- (xix) **"Plant"** means every temporary or accessory piece of equipment necessary or required to carry on or complete the work and extra work, in the time and manner herein provided;
- (xx) **"shall", "may", "herein", "person", "writing", "written", "surety", and "security" and words used in the singular number or the masculine' gender**, shall have the same meaning and effect as given in the Interpretation Act of Ontario;
- (xxi) **"Site"** means the site described in subparagraph 1.1 hereof at which the Work is to be performed as indicated in the Drawings and/or Specifications;
- (xxii) **"Specifications"** means the Specifications included as Section IV of the Tender Package;

- (xxiii) "**Specifications**", "**General Conditions**", and "**Agreement**" mean respectively the Specifications, these General Conditions and the Agreement forming part of the Contract;
- (xxiv) "**Tender Package**" means the contents of the Tender Package dated 2018-07-09 for the Work, as listed on the "Contents" page immediately proceeding these Instructions;
- (xxv) "**Work**" or "**Works**" means all services and deliverables to be provided by the Contractor as mentioned or referred to in the Tender, Specifications, General Conditions, Agreement, Plans, Profiles, Drawings and Addenda forming part of the Contract, including all extra or additional work or material, matters or things which may be ordered by the Chief Operating Officer, as herein provided;
- (xxvi) "**Toronto Zoo**" "**Owner**" or the words "**the Board**" means the Board of Management of the Toronto Zoo.

- 1.3 All references to "Tender Form", "Appendix", "Statutory Declaration of Verification", "Bid Bond", "Agreement to Bond", "Performance Bond", "Payment Bond", "Agreement", "Statutory Declaration of Paid Tax and Assessments", "General Conditions" "Specifications" or "Drawings" in these Instructions are to those comprising the Tender Package.
- 1.4 Sub-Trades:  
It is the responsibility of the Contractor to arrange parts of the Work to be performed by the subtrades with the sub-contractors directly.

## 2.0 EXISTING CONDITIONS AND SITE INSPECTION:

- 2.0 A site meeting has been scheduled for Thursday, 2018-07-26 at 9:00 a.m. Tender documents are available to download at no charge from the Toronto Zoo website, <http://www.torontozoo.com/ExploretheZoo/BusinessOpportunities.asp> Bidders are solely responsible for downloading all documentation and checking periodically for any addenda prior to the stipulated closing date.
- 2.1 Prospective Tenderers are warned that work and/or materials required for the proper performance of the Work, even though not expressly stipulated in the Specifications and/or the Drawings but that is/are necessitated by conditions determinable from the Tender Call material and/or from inspection of the Site/Building as it now exists, will NOT be treated as extra work and will NOT qualify for any extra payment under article 31 of the General Conditions.
- 2.2 Questions regarding the Contract Documents shall be directed to the Owner's representative as per the Questions on Bid Documents (QBD) Form immediately following the Instructions to Tenderers section. All questions must be received by 4:00 p.m. on Tuesday, 2018-07-31.
- 2.3 Report all discrepancies, omissions, errors, departure from building by-laws, or good practice and points considered to be of dubious intent, so that the Engineer may issue clarification. The Consultant and Owner will not be responsible for oral instructions. Contractor shall obtain or check all measurements or dimensions at the building as may be necessary. Contractor shall provide any construction permits including but not limited to ESA & TSSA as required.

**3.0 TENDER FOR ENTIRE CONTRACT WORK AND SUBMISSION DEADLINES:**

- 3.1 Tenders each consisting of the documents referred to in paragraph 5.1 of these Instructions and contained in a sealed envelope using the attached submission label will be received:

**BY MAIL**

at the Administrative Support Centre of the Board of Management of the Toronto Zoo, Administrative-Support Centre, 361A Old Finch Avenue, Toronto, Ontario, M1B 5K7; or

**BY HAND**

at the Administrative-Support Centre, 361A Old Finch Avenue, Toronto, Ontario.

**DEADLINE**

**Tenders shall be received until 1200 hours (noon, local time) on Wednesday, 2018-08-08 and NO TENDER WILL BE ACCEPTED AFTER THIS DEADLINE.**

- 3.2 A Tender may be withdrawn at any time prior to the submission deadline specified in subarticle (1) hereof by delivery to the Toronto Zoo at the address therein specified of a written notice to that effect under the Tenderer's duly attested corporate seal (or if the Tenderer possesses no corporate seal, accompanied by a sworn statement establishing that the signatory of the notice has authority to bind the Tenderer), which notice shall identify the contract Tenderer and, if more than one Tenderer has been submitted by that Tenderer, the Tender(s) to be withdrawn, on the basis that the Tender material for any Tender so withdrawn shall be returned to the Tenderer as soon after the opening of all Tenders as is convenient for the Toronto Zoo.
- 3.3 A Bidder is responsible for all of its own costs and expenses with respect to the preparation and submission of its bid and participation in the RFT process, including the costs and expenses associated with preparing and submitting a Bid; attending the Information Meeting and Site Tours; attending interviews, meetings or discussions with the Toronto Zoo; and the negotiation, finalization and execution of an Agreement.

For the avoidance of doubt, Toronto Zoo will not assume any liability whatsoever for any of the foregoing costs and expenses.

- 3.4 **THE WORK AND EVERY PART THEREOF SHALL BE COMPLETED BY THE CONTRACTOR WITHIN/BY FRIDAY, 2018-10-19 FOR ALL WORK- FOLLOWING RECEIPT OF NOTICE TO COMMENCE WORK FROM THE CHIEF OPERATING OFFICER.**

**4.0 TENDER DOCUMENTS:**

- 4.1 Each Tender must consist of ONE (1) complete set of the following:
- (i) Tender Form and Appendices, properly completed (Form 1: see articles 5.0 to 11.0 of these Instructions);
  - (ii) Statutory Declaration of Verification (Form 2: see article 12.0 of these Instructions);
  - (iii) Bid Bond (Form 3: see paragraph 13.1 of these Instructions);
  - (iv) Agreement to Bond (Form 4: see paragraph 13.3 of these Instructions).
- 4.2 The Forms referred to in subparagraph 4.1 hereof and below, are set out in Section II of the Tender Package.

**5.0 TENDER FORM AND APPENDICES : COMPLETING FORM 1**

5.1 Each Tender must be on the Tender Form (Form 1, which includes the Appendices), with all blanks filled in and, where requested, inapplicable words struck out, and the Form must be properly executed as indicated in the Note on page 7 thereof.

5.2 The blanks to be filled in and deletions to be made in Tender Form (Form 1) are as follows:

<b>FORM 1 Item*</b>	<b>Subject</b>
1.1	Identity of Tenderer(s)
1.2	Municipality of residence and experience in the City of Toronto
1.3	Tenderer's Toronto Licensing Commission licensee number(s) and category(ies).
5.0 (i)	Net Contract Amount IN WORDS and numerals in (i), and TOTAL in numerals after (iii).
5.0 (i)	<b>NOTE 1:</b> The Net Contract Amount (the numerals take precedence over the words) must be based on the materials, methods, manufacturers and equipment (as applicable) stipulated in the Specifications and Drawings, without taking into account any of the potential price changes indicated in any of Appendices III to VI. Where the Specifications permit a choice the Tenderer may make the choice.
(ii)	Harmonized Sales Tax: i.e. 13% of the total of (i).NOTE: The Entry for this Tax is an estimate only and the Board of Management of the Toronto Zoo will correct any multiplication error.
(iii)	TOTAL of (i) to (ii).  NOTE: The "TOTAL" as completed by a Tenderer is an estimate only, and the Bulk Tender Price will be taken as the actual arithmetic total of the amounts shown in (i) 13% for H.S.T.
6.0 (i) or (ii)	Strike out inapplicable form of bid security and insert amount in words and figures after
(ii)	Name of surety company.
7.0 (vi)	Strike out clause (vi) if no Appendix VI (Unsolicited Alternatives) is being submitted.
Page 7	Place, date, name(s), signature(s), seals(s)
Appendix I	List of Subcontractors (names, addresses, telephone numbers) and Toronto License numbers (where applicable: see paragraph 9 of these instructions).
Appendix II	Unit Prices: see paragraph 10 of these Instructions

Appendix III	Itemized Prices: see paragraph 11.1, 11.5 and 11.6 of these Instructions
Appendix IV	Additional Prices: see paragraph 11.2, 11.5, and 11.6 of these Instructions
Appendix V	Alternative Prices: see paragraph 11.3, 11.5, and 11.6 of these Instructions.
Appendix VI	Unsolicited Alternatives (optional) see paragraph 22.0 of these Instructions.
Appendix VII	Tenderer's Resources/Methodology for the Work: see Article 25 of these Instructions. (Not applicable for this project.)
*Numbers refer to paragraphs unless otherwise indicated.	

- 5.3 Each Tenderer must, when requested, furnish satisfactory evidence that they have the ability and experience in the class of work being tendered for, and that they have sufficient capital and plant to enable them to prosecute the same successfully and to complete the Work within the time specified in clause (i) of paragraph 8 of the Tender Form.
- 5.4 The effect of paragraph 4.0 of the Tender Form is to prevent the successful Tenderer from relying on any claim of ignorance about the site or the documents, which Tenderers are urged to inspect and review carefully.
- 5.5 The effect of clause 8 (i) of the Tender Form is to oblige the Contractor to ensure that the Work is fully Complete, and the Work site surrendered to the Toronto Zoo, no later than the date specified in subarticle 30.2 of the General Conditions (OR the date specified therein by the Tenderer).
- 5.6 The effect of clause (iv) of paragraph 8.0 of the Tender Form is to oblige the Contractor to ensure that all materials necessary for the purposes of the Work, are of Canadian origin and manufacture, if available when required.
- 5.7 Any Tender whose Tender Form (including Appendices) is incomplete, conditional, or obscure, or contains additions not called for, erasures, alterations, or irregularities of any kind, may be rejected as informal.
- 5.8 Any Tender making use of Forms other than those supplied as Section II of the Tender Package may be rejected as informal.
- 5.9 All blanks on the Tender Form (including Appendices) must be legibly and properly filled in, otherwise the Tender may be rejected as informal.
- 5.10 Any question or uncertainty over how any blank space is to be filled in should be referred to Mr. Peter Vasilopoulos, Supervisor, Purchasing & Supply at (416) 392-5916, Fax (416) 392-6711.
- 5.11 The Toronto Zoo reserves the right to waive material and minor irregularities in any Bid. Schedule B below lists the irregularities and the respective action that will be taken by the Purchasing Agent, in determining whether a bid is non-compliant. This list is not exhaustive of all irregularities that may be contained in a Bid and may be amended by the Toronto Zoo, at its sole discretion, any time.

The following irregularities contained in bids such as quotation, tenders or proposal (“Response”) received by the Toronto Zoo shall result in the following actions:



IRREGULARITIES	ACTION
Late Response	Automatic rejection and not read publicly.
Unsealed Envelopes	Automatic rejection.
Insufficient Financial Security (No deposit or bid bond or agreement to bond or insufficient deposit or bid bond or agreement to bond).	Automatic rejection.
Response not completed in non-erasable medium and signed in ink.	Automatic rejection.
Incomplete Response	Automatic rejection unless, in the opinion of the Purchasing Agent, the incomplete nature is trivial or insignificant.
Qualified Response (qualified or restricted by an attached statement, unless allowed for), the qualification or restriction is trivial or not significant.	Automatic rejection unless, in the opinion of the Purchasing Agent the incomplete nature is trivial or insignificant.
Response received on documents other than those provided by the Toronto Zoo.	Automatic rejection unless, in the opinion of the Purchasing Agent, the matter is trivial or insignificant.
Execution of Bid Bond (Financial Security) <ul style="list-style-type: none"> <li>- Corporate Seal or signature of bidder missing.</li> <li>- Both corporate seal and signature of the bidder missing.</li> <li>Corporate seal or signature of authorized agents of bonding company missing.</li> </ul>	Two (2) business days to correct.  Automatic rejection.  Automatic rejection.
Other Bid Security – Uncertified Cheque	Automatic rejection.
Documents – Execution <ul style="list-style-type: none"> <li>- Corporate seal or signature missing.</li> <li>- Corporate seal and signature missing.</li> </ul>	Two (2) business days to correct.  Automatic rejection.
Erasures, Overwriting or Strike-Outs which are not Initialed: Uninitialed changes to response which are minor (example: the respondent’s address is amended by over-writing but not initiated).  Unit prices have been changed but not initialed and the contract totals are consistent with the price as	Two (2) business days to initial.  Two (2) business days to initial.

amended.  Unit prices have been changed but not initialed and the contract totals are not consistent with the price as amended.	Automatic rejection.
Minor Irregularities	The Purchasing Agent shall have the authority to waive irregularities deemed to be minor.

In exercising judgment the Purchasing Agent shall consider the advice of Legal.

### **6.0 ADDENDA: CHANGES/DISCREPANCIES/OMISSIONS**

- 6.1 The Toronto Zoo may issue Addenda advising of changes in, or explanations of, the Drawings or Specifications from time to time.
- 6.2 Any Tenderer who finds an apparent discrepancy, inconsistency, contradiction or omission in any of the Specifications, or Drawings, or who is doubtful about the meaning or intent of any part thereof, should submit their question in writing using the enclosed QBD form and an Addendum if necessary, will be issued.
- 6.3 In order to permit competition consistent with the Board of Management of the Toronto Zoo's interests, the Consultant will consider, prior to the deadline for submission of Tenders, requests for approval of products similar or equivalent to those specified by trade name, but such requests will be considered only if they comply with all of the following requirements:
- (i) each request must be in writing and received in the Consultant's office at least six (6) business days prior to the Tender submission deadline;
  - (ii) each request must be accompanied by complete technical data, including laboratory test reports, if applicable;
  - (iii) each request must explain fully the difference, if any, between the proposed product and the one or more named in the Specifications;
  - (iv) if a proposed substitute product requires, for its proper installation, any change(s) to the Drawings or Specifications for related work, the request must give complete information on such change(s).
- 6.4 If the requirements of subparagraph (3) hereof have been complied with and in the Consultant's opinion the proposed product is acceptable in lieu of the one or more specified, the Consultant will issue instructions in the form of an Addendum to all Tenderers pursuant to subarticle (1) hereof.
- 6.5 No Contractor will be permitted to use any alternative material or product that has not been authorized by the Specifications, the Drawings or an Addendum issued pursuant to subarticle (1) hereof.

### **7.0 TENDER FORM PRICING: TAXES AND DUTIES**

- 7.1 Every price set out in a submitted Tender Form must include all Federal Excise, including Harmonized Sales Tax and other taxes, where applicable, together with all duties, exchange or other charges.
- 7.2 Tenderers are required to familiarize themselves with all of the provisions of the Harmonized Sales Tax (HST) and shall not include in any tendered price any amount for harmonized sales tax on materials or services which are tax-exempt under the provisions of that Act.
- 7.3 If any additional tax or duty or any variation in any tax or duty imposed by the Government of Canada or the Province of Ontario becomes directly applicable to goods, material, articles or equipment, specified or required for, and in fact incorporated into, the Work, subsequent to the deadline set out in subparagraph 3.1 of these Instructions an appropriate increase or decrease in the Contract Price shall be made to compensate for such tax, duty or variation to the extent of such applicability, except in those cases in which public announcement was made prior to the said deadline by or on behalf of the levying authority indicating that such additional tax or duty or any variation therein was going to come into effect.
- 7.4 The Board of Management of Toronto Zoo will not accept claims for additional payment for sales taxes, harmonized sales taxes, duties or other taxes, levies or charges that a Tenderer claims were omitted from any tendered price except as set out in subparagraph 7.3 hereof.
- 8.0 TENDER FORM PRICING: ALLOWANCES (NOT APPLICABLE FOR THIS PROJECT)**
- 9.0 TENDER FORM PRICING: IDENTIFICATION OF SUBCONTRACTORS**
- 9.1 Each Tenderer must indicate in Appendix I to the Tender Form for each type of work or material listed therein:
- 9.1.1 whether same is to be provided by the Contractor's forces (by inserting "OWN FORCES") or by a sub-contractor (by inserting the sub-contractor's name and address);
- 9.1.2 contractor's or sub-contractor's licence number as issued by the Toronto Licensing Commission, wherever applicable.
- 10.0 TENDER FORM PRICING: UNIT PRICES**
- 10.1 For items most likely to be added as extras, or deleted for budget or other reasons, provision has been made for prearranged Unit Prices in Appendix II attached to the Tender Form and the prices must be filled in for a Tender to qualify for acceptance.
- 11.0 PRICE CHANGES: FOR POTENTIAL DELETIONS / ADDITIONS / SUBSTITUTIONS**
- 11.1 Each Tenderer must provide in Appendix III to the Tender Form details of reductions in the Bulk Tender Price if any of the Items listed in Appendix III is or are deleted from the Work.
- 11.2 Each Tenderer must provide in Appendix IV to the Tender Form details of increases in the Bulk Tender Price if any of the Items listed as potential extras in Appendix IV is or are in fact included in the Work.

- 11.3 Each Tenderer must provide in Appendix V to the Tender Form details of changes in the Bulk Tender Price if any of Items listed as potential alternatives in Appendix V is or are substituted for the corresponding Item(s) originally stipulated in the Specifications and/or Drawings.
- 11.4 The Bulk Tender Price must:
- 11.4.1 include all Itemized Prices appearing in Appendix III and the prices for all Item(s) originally stipulated as mentioned in subparagraph 11.3 hereof;
  - 11.4.2 exclude all prices for potential additions appearing in Appendix IV and any price changes resulting from substitutions as mentioned in subparagraph 11.3 hereof.
- 11.5 The price change for each potential deletion, addition or alternative, indicated in Appendices III to V must take into consideration and allow for changes and adjustments in other work as may be necessary to form a complete and finished job, including, where applicable, all labour, tools, delivery/ handling, overhead, profit and duties/taxes unless otherwise specified.
- 11.6 Any single potential deletion, addition or alternative, indicated in Appendices III to V or any combination thereof, may be implemented by the Board of Management of the Toronto Zoo, and the work shall be performed accordingly with the corresponding change(s) in Contract Price.

## **12.0 STATUTORY DECLARATION (FORM 2)**

- 12.1 In completing the Statutory Declaration, Tenderers are reminded to fill in the applicable blanks and strike out the inapplicable ones, and to have the declarant attend before a solicitor, notary public or other Commissioner for Oaths for proper execution.

## **13.0 BONDING DOCUMENTS (FORMS 3, 4, 5, 6)**

- 13.1 Each Tender must include a Bid Bond executed under seal by the Tenderer and a surety authorized by law to carry on business in Ontario with an office in the City of Toronto and otherwise acceptable to the Board in the amount of 10% of the Net Contract Amount in accordance with Form 3, or in the alternative provide a certified cheque payable to the "Toronto Zoo" in that amount.
- 13.2 Withdrawal of a submitted Tender prior to the end of the ninety (90) day period referred to in paragraph 9.0 of the Tender Form, or failure to execute the Contract Documents in accordance with paragraph 13.1 of these Instructions if the Tender is accepted or to provide a Performance or Payment Bond as required, will result in forfeiture of the Bid Bond or cash security amount.
- 13.3 Each Tender must include an Agreement to Bond executed by a surety who meets the requirements set out in subparagraph 13.1 hereof, promising to provide the Performance and Payment Bonds referred to in sub-paragraph 13.4 hereof, in accordance with Form 4.
- 13.4 If a Tender is accepted, the successful Tenderer must provide, concurrently with return of the Contract documents referred to in paragraph 14 of these Instructions, Performance and Labour & Material Payment Bonds, each in the amount of 50% of the Bulk Tender Price in STRICT ACCORDANCE with Forms 5 and 6, executed by a surety who at that time and continuously thereafter until all of the Contractor's obligations under the Contract are fulfilled, meets the requirements set out in subparagraph 13.1 hereof and in article 29.1 of the General Conditions.

## **14.0 CONTRACT DOCUMENTS**

14.1 Any Tenderer whose Tender is accepted must execute an Agreement in accordance with Form 7, see to completion of a Statutory Declaration in Form 2 (Corporations Tax and Workplace Safety & Insurance) and furnish, duly executed, the two Bonds referred to in paragraph 13.4 of these Instructions, within Seven (7) Business Days (not including a Saturday, Sunday or legal or civic holidays) from the date of mailing of notice from the Toronto Zoo to the Tenderer at the address given in the Tender Form, that the Contract documents are ready for execution.

14.2 Attached to the Agreement and forming part of the Contract will be the Tender Form as submitted, these Instructions, and the General Conditions (Section III of the Tender Package); the Drawings and Specifications will also be incorporated in the Contract by reference.

### **15.0 GENERAL CONDITIONS: CLARIFICATIONS**

Tenderers are urged to read Section III - General Conditions of the Tender Package in their entirety.

### **16.0 PERMITS/LICENCES/APPROVALS**

16.1 The General Building Permit and Toronto & Region Conservation Authority (TRCA) permit for the Work shall be obtained and paid for by the Board of Management of the Toronto Zoo.

16.2 Any delay in issuance of the Building Permit/TRCA permit which compromises the ability of the Contractor to meet the completion date for the Work as set out in clause (i) of paragraph 9 of the Tender Form shall entitle the Contractor to an appropriate extension of that completion date without penalty, but there shall be no right to damages for any reason whatsoever arising out of any such delay.

16.3 It shall be the responsibility of the Contractor to apply for, pay for and obtain all other permits, licences and approvals in connection with the Work from the authority having jurisdiction in each case.

16.4 The Contractor shall submit copies of licenses and/or certificates of Qualification for all trades working on the project, including own forces and sub-trades. No work can be undertaken by these workers until such documentation is provided.

### **17.0 TEMPORARY SERVICES**

17.1 It shall be the responsibility of the Contractor to arrange and pay for all temporary water, electrical power and telephone services necessary for the Work (see also article 34.0 of the General Conditions).

### **18.0 WINTER ACCESS**

18.1 The Contractor shall be responsible for clearing all snow and ice from the access route to the Work site, at his/its own expense, and in a manner satisfactory to the Chief Operating Officer, who shall be consulted in advance with respect thereto.

### **19.0 EXTRA PRINTS**

19.1 The Board of Management of the Toronto Zoo will furnish, at no charge, the following prints of the Drawings and the Specifications to the Contractor:

19.1.1 Contract Drawings: up to three (3) sets;

19.1.2 Specifications: up to three sets;

19.1.3 Any additional copies of the foregoing required to obtain necessary permits, licences or approvals.

19.2 The Board of Management of the Toronto Zoo shall provide further copies of the material referred to in subparagraph 19.1 hereof to the Contractor on request, at cost.

## **20.0 AS-BUILT DRAWINGS**

20.1 The Contractor will receive from the Toronto Zoo two extra sets of white prints for the record drawings, on which the Contractor shall clearly mark all changes or deviations, as the Work progresses. On one set and on completion of the Work the Contractor shall neatly transfer notations to second set and submit both sets to the Consultant for review.

20.2 Contractor shall arrange and pay for the Consultant to transfer the marked up prints to CADD media.

20.3 At completion of project Contractor to submit one marked up set of white prints and one marked up set of specifications stamped "As-Built" with the Contractor's name, along with one complete set of "As-Built" CADD files. Complete set includes all of the drawings issued as part of the tender package.

20.4 The Board of Management of the Toronto Zoo shall hold back 5% of the awarded Contract value until receipt of "As-Built" plans and drawings, CADD files and drawings, maintenance manuals and warranties.

## **21.0 OCCUPATIONAL HEALTH AND SAFETY ACT**

21.1 For the purpose of the Occupational Health and Safety Act of Ontario R.S.O. 1990 c. 0.1 and all regulations thereunder as amended from time to time collectively the OHSA, the Contractor will be designated the "Constructor", and the Contractor shall assume the responsibilities of the Constructor as set out in that Act and its Regulations (including the implementation of such precautions and safeguards as will protect all workers at the Site from any adverse effects caused by the designated substances referred to in sub-article (21.2) hereof) and save the Board of Management of the Toronto Zoo harmless from and against all adverse consequences of any failure by the Contractor to discharge those responsibilities.

21.2 A list of "designated substances" (as defined in the Occupational Health and Safety Act) present at the Site (if any) has been included in the General Conditions Article 51.3 of the Tender Package pursuant to section 18a of that Act.

## **22.0 UNSOLICITED ALTERNATIVES IN TENDER**

22.1 A Tender may propose a further alternative for any piece of equipment, material or product not mentioned as an alternative in the Specifications, Appendix V or any Addendum, but no such further alternative will be considered unless the following requirements are met:

- 22.1.1 the Bulk Tender Price inserted in paragraph 5.0(i) of the Tender Form must be based on the Specifications and not on any unspecified alternative proposed by the Tenderer;
- 22.1.2 each alternative proposed must be listed and the difference in price, if any, shown in Appendix VI attached to the Tender Form;
- 22.1.3 each alternative proposed must take into consideration and allow for changes and adjustments in other work as may be necessary to form a complete and finished job, and no additional claims will be considered at a later date;
- 22.1.4 for each alternative proposed, there must be submitted in or with Appendix VI sufficient information to enable the Consultant to determine its acceptability, including;
- (i) names of manufacturer and supplier;
  - (ii) change in price (if any);
  - (iii) reason for proposing alternative;
  - (iv) manufacturing details and performance data;
  - (v) dimensions and clearances, which must be within space allocated on Drawings;
  - (vi) effects on other work;
  - (vii) other pertinent facts.
- 22.2 The successful Tenderer will be responsible for any additional installation cost for any accepted alternative.
- 22.3 The Board of Management of the Toronto Zoo reserves the right to accept or reject any proposed alternative.
- 22.4 Under no circumstances will alternatives submitted after the deadline for submission of Tenders set out in paragraph 3.1 of these Instructions, be considered.
- 22.5 If no alternatives are being proposed, clause (vi) of paragraph 8 of the Tender Form should be STRUCK OUT and Appendix VI either omitted or marked "Not Applicable".

### **23.0 GEOTECHNICAL INVESTIGATION**

- 23.1 A geotechnical investigation has not been completed and is not required.

### **24.0 RIGHT TO ACCEPT OR REJECT TENDERS**

- 24.1
- i. The Toronto Zoo reserves the right to reject any or all Tenders or to accept any Tender, should it deem such action to be in its interests.

- ii. The Toronto Zoo may modify and/or cancel this Tender Call prior to accepting any Bid.
- iii. Bids may be accepted or rejected in total or in part.
- iv. The lowest quoted price may not necessarily be accepted by the Toronto Zoo.
- v. In determining which Bid provides the best value to the Toronto Zoo, consideration may be given to the past performance of any Bidder.
- vi. The Toronto Zoo reserves the right to verify the validity of information submitted in the Bid and may reject any Bid where, in the Toronto Zoo's sole estimation, the contents appear to be incorrect, inaccurate or inappropriate.
- vii. The Toronto Zoo reserves the right to assess the ability of the Bidder to perform the contract and may reject any Bid where, in the Toronto Zoo's sole estimation, the personnel and/or resources of the Bidder are insufficient.
- viii. If, in the opinion of the Toronto Zoo, any Bidder has underestimated the value of the goods and/or services to be provided as reflected in its submitted price/fee, the Toronto Zoo may reject its Bid as unbalanced (i.e., not representative of the scope of the goods and/or services). The Toronto Zoo may reject a bid if it determines, in its sole discretion, that the bid is materially unbalanced.

A bid is materially unbalanced when:

- (1) it is based on prices which are significantly less than cost for some items of work and prices which are significantly overstated in relation to cost for other items of work; and
- (2) the Toronto Zoo had determined that the bid may not result in the lowest overall cost to the Toronto Zoo even though it may be the lowest submitted bid; or
- (3) it is so unbalanced as to be tantamount to allowing an advance payment.

## **25.0 TENDERER'S RESOURCES/METHODOLOGY**

- 25.1 Each Tenderer must indicate in Appendix VII to the Tender Form the information called for therein describing the Tenderer's financial and personnel resources and the proposed methodology for performance of the work. (Not applicable for this project.)

## **26.0 WARRANTIES AND GUARANTEES**

- 26.1 The warranties and guarantees of all the material and services associated in a construction phase, will be in effect from the completion date of that phase, to the satisfaction of the Chief Operating Officer. The substantial completion will be issued at the completion of the whole project, i.e., at the end of all the construction phases involved in the project, to the satisfaction of the Chief Operating Officer.

## **27.0 TORONTO ZOO OFFICIAL POLICY PROCEDURES**

- 27.1 The following Toronto Zoo Official Policy Statements and procedures are included in this RFT, are applicable for this project.



SAFE-001	Occupational Health & Safety
SAFE-002	Health & Safety Hazard Reporting
SAFE-005	Hazardous Materials
SAFE-007	Confined Space
SAFE-013	Lock Out / Tag Out Procedure
SAFE-017	Contractor Safety
SAFE-018	Vehicles on Site
SAFE-025	Hot Work
SAFE-026	Scaffold & Ladder Safety

Toronto Zoo's Commitment to the City of Toronto's Corporate Smog Alert Response Plan.

Toronto Zoo's Accessible Customer Service Training Requirements: Contractors, Consultants and other Service Providers.

## **28.0 GOVERNING LAW**

28.1 The Request for Tender (RFT) and tender submitted in response to it and the process contemplated by this RFT shall be governed by the laws of the Province of Ontario. Any dispute arising out of this RFT or this RFT process will be determined by a court of competent jurisdiction in the Province of Ontario.

**SUBMISSION LABEL**

This address label should be affixed to the front of your sealed tender/quotation/proposal envelope/package submission. Toronto Zoo will not be held responsible for envelopes and packages that not properly labelled or submitted to an address other than the one listed on this label.

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Vendor Name \_\_\_\_\_

**RFT #22 (2018-07)  
MEMBER & GUEST SERVICES BUILDING ROOF REPLACEMENT  
Closing: Wednesday, 2018-08-08, 12:00 local time**

**TO BE RETURNED TO**

**TORONTO ZOO  
C/O SUPERVISOR, PURCHASING AND SUPPLY  
ADMINISTRATION SUPPORT CENTRE  
361A OLD FINCH AVE.  
TORONTO, ONTARIO  
M1B 5K7**

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**QUESTIONS ON BID DOCUMENTS (QBD)**

Deadline: See Section Instructions to Bidders 2.2

Contact:

To: The Toronto Zoo  
361A Old Finch Avenue  
Toronto, ON M1B 5K7  
Tel: (416) 392-5916  
Fax: (416) 392-6711  
Attn: Peter Vasilopoulos  
pvasilopoulos@torontozoo.ca

From:	_____	Date:	_____
Firm:	_____	Tel:	_____
Spec Section:	_____	Paragraph(s):	_____
Drawing Sheet:	_____	Detail(s):	_____

Question(s):

Mark this box if the QBD can be answered by Bidder's review of the documents. Reply with location(s) where the information can be obtained.

Reply:

By:

Firm:

Date:

The reply is an answer to a Bidder's question. The reply does not change the Bid Documents unless the information contained therein is issued in an Addendum. At the sole discretion of the City, the question and reply may be returned to the questioner and distributed to all bidding general contractors for informational purposes.

# OFFICIAL POLICY

Section: Safety

Subject: **HEALTH & SAFETY**

<b>PURPOSE</b>	This policy is intended to provide information and direction to Zoo employees on their ongoing responsibility for health and safety in the workplace.
<b>POLICY</b>	The Board of Management of the Toronto Zoo is committed to take all precautions to protect and promote the safety of its employees. The Management shall continue to ensure that the Zoo is a safe place to work.
<b>PROCEDURE</b>	To maintain a safe work environment, health and safety shall be integrated with all organizational activities.
<i>Work safely</i>	A safe workplace is every employee's responsibility. The active participation and support of all employees is vital to maintaining and improving health and safety in the workplace. Every employee shall comply with health and safety legislation, work in a safe manner and report all hazardous conditions, unsafe practices and accidents to their supervisor.
<i>Contractors</i>	All contractors/subcontractors and their employees shall meet or exceed the health and safety program standard of the Zoo.
<i>Occupational Health &amp; Safety Act of Ontario</i>	The Occupational Health and Safety Act establishes the general duties applying to owners, employers, supervisors, suppliers and workers with respect to safety in the workplace.
<i>Duties</i>	The overall duties of the employer, supervisors and workers are outlined in Part III of the Occupational Health & Safety Act. All staff shall refer to the Occupational Health & Safety Act for a complete listing of responsibilities.
<i>Responsibilities</i>	<p>All Managers shall:</p> <ol style="list-style-type: none"> <li>1. Comply with the Occupational Health &amp; Safety Act, regulations and related legislation and review annually to communicate changes to ensure that they are understood by employees under their direction.</li> <li>2. Administer and enforce the Occupational Health &amp; Safety policies and procedures of the Toronto Zoo and review annually and communicate changes to ensure that they are understood by supervisors.</li> <li>3. Exercise hazard recognition and control through workplace inspection, conducting information sessions (e.g. staff meetings), incident investigation, employee training and observation.</li> <li>4. Ensure that Health &amp; Safety obligations are communicated within the first week of hire.</li> </ol>

Subject: **HEALTH & SAFETY**

All Supervisors shall:

1. Comply with the Occupational Health & Safety Act, regulations and related legislation and review annually to communicate changes to ensure that they are understood by employees under their direction.
2. Administer and enforce the Occupational Health & Safety policies and procedures of the Toronto Zoo.
3. Exercise hazard recognition and control through workplace inspection, conducting information sessions (e.g. staff meetings), incident investigation, employee training, observation, counselling and documenting.
4. Communicate Health & Safety obligations within the first week of hire.

All employees shall:

1. Adhere to the health and safety legislation, safety policies and procedures.
2. Wear or use protective equipment as required and avoid unsafe acts.
3. Not operate any equipment without proper instruction or engage in unsafe acts.
4. Notify their supervisor of unsafe conditions or workplace accidents or injuries.
5. Use and apply education and training with the aim of safety.

*Joint Health & Safety Committee*

The Joint Health & Safety Committee (JHSC) is comprised of employer and employee representatives with specific duties that are defined in the Occupational Health & Safety Act.

*Scope*

It is recognized that health and safety is a co-operative responsibility. The JHSC, which represents management, the bargaining unit and non-bargaining employees, is an integral part of the overall program.

A complete description of the duties and responsibilities is contained in the Agreement governing the JHSC.

*Mandate*

The Joint Health & Safety Committee shall:

1. Identify, evaluate and recommend solutions to matters pertaining to health and safety in the workplace to senior management.
2. Ensure that the Zoo provides joint health and safety programs, and that employees know their rights, restrictions, responsibilities and duties under the Occupational Health and Safety Act.

Subject: **HEALTH & SAFETY**

*Program administration  
and co-ordination*

3. Conduct JHSC inspections of the workplace.

Under the direction of the Chief Operating Officer, the Safety & Security Manager will oversee the Health & Safety Program of the Zoo.

The Safety & Security Manager shall:

1. Provide information to the JHSC and develop health & safety policies and programs that are of use to the Zoo.
2. Liaise with external organizations on Occupational Health & Safety matters and analyze health and safety data to make recommendations for health and safety improvements.
3. Provide assistance to staff in the development of emergency procedures and safe work procedures.
4. Conduct follow-up investigations in conjunction with JHSC members on relevant issues.
5. Track Occupational Health & Safety measures of the organization and report matters to Managers, Directors, COO and CEO.
6. Co-ordinate and provide Occupational Health & Safety training programs.
7. Manage the Zoo's Safe Driving Program.

*Health & Safety  
Program information*

It is important that employees perform their duties in the safest possible manner and be aware of their responsibility to promote health and safety in the work environment among their co-workers.

The Safety & Security Branch promotes health and safety awareness through training sessions, documents, and information to employees.

The process for updating safety policies & procedures is as follows:

1. The Division Head, Branch Manager or Supervisor shall forward copies of policies (new or revised policies) to the Safety & Security Manager for review.
2. The Safety & Security Manager will forward a draft to the Director of Planning & Analysis for review.
3. As required, policies may be submitted to the JHSC for comment.

The above process is consistent with the Policy Formulation & Implementation policy (ADM-001), which can be referenced for further detail.

Subject: **HEALTH & SAFETY**

<i>Safety training programs</i>	<p>The Safety &amp; Security Manager will arrange/conduct training to inform Management and employees of relevant legislation or prevention programs. These training programs may include:</p> <ol style="list-style-type: none"> <li>1. The Occupational Health &amp; Safety Act and Regulations, and Workplace Safety &amp; Insurance Act.</li> <li>2. Health &amp; safety policies and workplace safety procedures of the Zoo.</li> <li>3. Hazard recognition, investigation and accident prevention.</li> <li>4. Workplace inspections, Workplace Hazardous Materials Information System (WHMIS), and preventive health education and recognition programs.</li> <li>5. Emergency Response procedures, First Aid and CPR.</li> <li>6. Other programs as required.</li> </ol> <p>The Human Resources Branch will arrange training session in other areas of Occupational Health &amp; Safety, as recommended by the Safety &amp; Security Manager and approved by the Chief Operating Officer.</p>
<i>Branch-specific safety training programs</i>	<p>Each Director, Manager &amp; Supervisor is responsible for arranging or conducting safety training programs that are specific to the needs of the individual work areas or individuals. Examples may include equipment operation and use, and safe work procedures. In such cases the records of this training shall be forwarded to the Safety &amp; Security Manager.</p>
<i>Orientation training</i>	<p>Managers/Supervisors are responsible for the distribution and discussion of health and safety procedures as part of the health and safety orientation and ongoing training they provide to:</p> <ol style="list-style-type: none"> <li>1. New employees, employees re-assigned to their units, and employees returning from extended absence.</li> <li>2. Current employees, as part of a regular review of Health &amp; Safety Policies and Procedures, and Branch Instructions.</li> </ol>
<i>Documentation</i>	<p>Supervisors shall complete training checklists and record all safety orientation, job specific and other relevant training in the employee personnel files.</p>
<i>Channel for discussion</i>	<p>A safety orientation/training session is the right time to reinforce an "open door policy" on the Zoo's health and safety program. Employees must be able to bring forth any health and safety issue or concern to their supervisors' attention for discussion and resolution.</p>
<i>Employee involvement</i>	<p>Supervisors shall involve their employees in regular meetings to discuss health and safety issues. The involvement of all staff is vital to the success of the Zoo's</p>

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Subject: **HEALTH & SAFETY**

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*Scope of Health &  
Safety Policy*

health and safety program.

This policy is guided by existing health and safety legislation. Where there is a discrepancy between this policy and existing legislation, the legislation shall prevail.

**REFERENCE**

Policy Formulation & Implementation, ADM-001



**OFFICIAL POLICY**

Section: Safety

Subject: **HEALTH & SAFETY HAZARD REPORTING****PURPOSE**

This policy is intended to advise employees on the measures they should take when they encounter hazardous conditions in the workplace.

**POLICY**

All employees shall report conditions which are, or which they deem to be, hazardous to the health and safety of themselves or fellow employees. They are urged to inform their supervisor of all hazardous conditions before submitting a Health & Safety Hazard Report, (form #TZ 10).

Supervisors are responsible for ensuring that the employees under their direction are made aware of the procedure for reporting hazardous working conditions.

**PROCEDURE***Health & Safety  
Hazard Report*

When an employee notices a hazardous condition, they are required to submit a completed Health & Safety Hazard Report to their supervisor. Briefly describing the nature of the hazard and its exact location, the employee shall submit the report to their supervisor, forward the second copy to the Safety & Security Manager, the third copy to the Joint Health & Safety Committee and retain the last copy.

*Response time*

The supervisor shall within seven (7) days of receiving the report, review the Hazard Report and complete the Action Taken or Recommendation section. If they do not view the situation as hazardous, the supervisor will outline the reasons in writing on the Hazard Report and discuss the Report with the employee. The employee shall complete the section on Employee Comments, and the supervisor will forward the white copy to the Safety & Security Manager.

*Corrective measures*

If the supervisor can take corrective action, they shall document such action on the Hazard Report and discuss the Report with the employee who shall complete the section for Employee Comment. The supervisor will forward the white copy to the Safety & Security Manager.

*Supervisor's  
limitations*

The supervisor shall forward the Hazard Report to their branch manager, if they do not have the authority to correct the hazardous condition. The branch manager shall respond to the Hazard Report within seven days of the original submission.

*Branch manager's  
decision*

The branch manager shall document their decision on the Hazard Report and discuss the report with the employee. The manager shall give reasons for disagreeing that the condition is hazardous, or outline the corrective measures to be taken if the condition is deemed hazardous. The employee shall complete the section for Employee Comment, and the manager shall forward the copy to the Safety & Security Manager. The branch manager shall file a copy for their records.

Subject: **HEALTH & SAFETY HAZARD REPORTING**

<i>Failure to respond</i>	Should the Safety & Security Manager not receive a reply to the Health & Safety Hazard Report within the required 7 days, the manager (or designate) shall follow-up with the supervisor/manager to whom the original report was submitted. If there is still no written reply within 14 days of the original submission, the Safety & Security Manager (or designate) shall bring that specific Hazard Report to the attention of the responsible Division Head and forward a copy to the Chief Operating Officer.
<i>Co-Chair</i>	The Co-Chair shall bring submitted Health & Safety Hazard Reports to the Joint Health & Safety Committee meetings. The Committee shall discuss and may make joint written recommendations on unresolved hazard reports. The Co-chairs shall present all hazard reports to the Joint Health & Safety Committee for their review.
<i>Joint Health and Safety Committee</i>	The Joint Health & Safety Committee shall review all Health & Safety Hazard Reports and, when required, propose alternative solutions or corrective measures to the responsible Division Head. The Joint Health & Safety Committee shall retain one copy of the completed Hazard Report, forward one copy to the responsible supervisor and the third copy to the originating employee.
<i>Unresolved health and safety problems</i>	In accordance with the Joint Health & Safety Committee Agreement, the JHSC may refer, in writing, any health and safety issue which has not been resolved after two committee meetings to the Chief Executive Officer. The Chief Executive Officer shall reply in writing to the committee within twenty-one days. The Joint Health & Safety Committee may refer to the Ministry of Labour any issue which has not been resolved after three meetings.
<i>Employee's discretion</i>	The employee may contact the Ministry of Labour (Occupational Health and Safety Branch) directly at any time, but preferably after the above steps have been taken. Further, the employee can submit a report to their union representative for follow-up at a Union/Management meeting.
<i>Work refusal</i>	An employee may refuse to work in a situation which is believed to be unsafe or injurious to health. The procedure regarding a work refusal is outlined in the Collective Agreement, the Occupational Health and Safety Act and the Zoo policy on Work Refusal & Work Stoppage (SAFE-015).
<b>REFERENCE</b>	Work Refusal & Work Stoppage Policy, SAFE-015



OFFICIAL POLICY

Section: Safety

Subject: HAZARDOUS MATERIALS

<b>PURPOSE</b>	This policy defines the respective responsibilities of Zoo staff in the labelling, storage, training and safe use of hazardous materials as outlined under the Workplace Hazardous Materials Inventory System (WHMIS) regulations of the Health and Safety Act.
<b>POLICY</b>	The Toronto Zoo shall develop, maintain and review a hazardous materials program which complies with the WHMIS regulation of the Occupational Health and Safety Act.
<b>PROCEDURE</b>	<p>The supervisor of a work area shall ensure that:</p> <ul style="list-style-type: none"> <li><i>Supplier Label</i> - Any container of a hazardous material used in the workplace has a supplier label which complies with WHMIS regulation attached to it.</li> <li><i>Workplace Label</i> - If a hazardous product is transferred from a supplier container into another container, a “workplace label” is attached to the second container, which complies with the regulation. If an employee uses the hazardous material in the second container immediately, they will require no workplace label.</li> <li><i>Access to MSDS</i> - Material Safety Data Sheets (MSDS) for every hazardous product used in the workplace are posted in a central location and such that each employee has access.</li> <li><i>New Hazardous Products</i> - MSDS are obtained for all new hazardous products prior to their introduction into the workplace and that they forward copies to the Joint Health &amp; Safety Committee and the Security &amp; Safety Manager.</li> <li><i>Disposal</i> - Any surplus, outdated or other hazardous materials which become waste are recycled or disposed of in accordance with all Federal and Provincial regulations. Disposal of small quantities of hazardous waste can be arranged through the Horticulture Branch.</li> <li><i>Employee Training</i> - Each employee who uses a hazardous product in the workplace receives training on the safe use, handling, storage and emergency procedures for that product. The supervisor shall document all such training and ensure that every employee works safely with hazardous materials.</li> <li><i>Review</i> - Conduct annual reviews of all materials to determine whether they are still required and whether or not a less hazardous or more environmentally sound product could be used (see Environment First Policy GEN-001).</li> </ul>

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**Subject: HAZARDOUS MATERIALS**

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*Obtain MSDS*

The Security & Safety Manager shall ensure that:

- Suppliers of hazardous materials provide MSDS for all products used at the Zoo, in cases where supervisors have not been successful in their attempts to obtain them.

*Central Inventory*

- Maintains and updates, as required, a central inventory of all hazardous products which are used at the Zoo. The Security & Safety Manager shall have the Joint Health & Safety Committee and the Environmental Protection Committee review this inventory for recommendations on its content.

*Training Program*

- A general training program is established to supply information to all employees on WHMIS requirements. They shall develop this training program in conjunction with the Joint Health & Safety Committee and review it annually.

*Monitoring Compliance*

- Through regular monitoring of the workplace, all employees follow established procedures; use the MSDS and appropriate labels; make available to employees all the information they need to perform their job.

*Employee's Obligation*

The Employees shall:

- Participate in the WHMIS training program and use that knowledge to protect their health and safety and that of their co-workers.
- Inform their supervisor if any supplier or workplace labels have been removed, defaced or altered and about any unsafe work practices of which they are aware.

**REFERENCE**

Environment First Policy - GEN-001



OFFICIAL POLICY

Section: Safety

Subject: WORKING IN CONFINED SPACE

<b>PURPOSE</b>	The intention of this policy is to ensure that employees adhere to the appropriate legislation and to outline safe work procedures for the "siphon chamber", or other confined space at the TZ.
<b>POLICY</b>	Employees of the TZ who work in the siphon chamber or other confined space shall comply with Regulation 851 (Industrial Establishments), to ensure a safe work environment.
<i>Definition</i>	Under the Industrial Establishments Regulation 851 of the Occupational Health and Safety Act, R.S.O. 1990, a confined space is defined as a space in which, because of its construction, location, contents or work activity therein, the accumulation of hazardous gas, vapour, dust or fume or the creation of an oxygen-deficient atmosphere may occur (R.R.O. 851).
<b>PROCEDURE</b> <i>Training</i>	All personnel who, in the course of their work, may be required to enter the siphon chamber or other confined spaces, shall be trained by a competent person in the proper use of the pertinent safety equipment and procedure.
<i>Atmosphere Test</i>	<p>Before and during entry into the siphon chamber or other confined spaces, employees who are trained and are competent must test the atmosphere for:</p> <ol style="list-style-type: none"> <li>1. Combustibility</li> <li>2. Oxygen</li> <li>3. Toxicity</li> </ol>
<i>Documenting Test Results</i>	The Employees must record the results of all atmosphere tests on the "Gas Tech Readings Confined Space" form to conform with the Occupational Health and Safety Act.
<i>Monitor Gas In the Atmosphere</i>	Where the atmosphere tests of the siphon chamber or other confined spaces are negative, the employees may enter the work place, subject to further testing, as required, to ensure the continued safety of the work crew.
<i>High Combustible Mixture</i>	Employees shall not enter the siphon chamber, or confined space, where the combustibility test indicates a combustible mixture of 50% or more of the Lower Explosive Limit (LEL) Scale. In such cases the employees shall inform their supervisor by telephone or radio of this decision.
<i>Excessive Harmful Gas</i>	When atmosphere tests of a confined space indicate an oxygen content of less than 18% or more than 23%, and/or where toxicity tests of a chamber atmosphere indicate a hydrogen sulfide level in excess of 10 ppm or a carbon monoxide level in excess of 50 ppm, the employees shall not enter the

Subject: **WORKING IN CONFINED SPACE**

<i>Emergency Entry</i>	<p>confined space and shall inform their supervisor immediately by telephone or radio of the prevailing condition.</p> <p>If they cannot purge and ventilate the siphon chamber, or confined space, to provide and maintain a safe atmosphere, the employees shall enter only in an emergency. An employee who enters the chamber shall be equipped with a self-contained air breathing apparatus and a safety harness to which is attached a lanyard held by an employee who is outside and furnished with a two-way radio.</p>
<i>Precautionary Measures</i>	<p>Before or during entry into a confined space, an employee shall ensure that all electrical sources are disconnected from their power source and locked out. They shall physically disconnect and blank off all pipes and systems whose contents may introduce hazardous material into the confined space. The blank shall be sufficiently strong to withstand line pressure and should not be susceptible to corrosion. (See also Equipment Lockout/Tagout Policy, SAFE-013).</p>
<i>Safety Watch</i>	<p>When an employee enters the siphon chamber, or any confined space, another employee who is trained in artificial respiration shall be stationed outside to act as Safety Watch. The Safety Watch shall be equipped with a radio and must contact Control in case of an emergency. The Control Operator shall contact emergency personnel as directed by the Safety Watch.</p>
<i>Fire Hazard</i>	<p>Employees are strictly prohibited from smoking, carrying an open flame, or performing hot work in the siphon chamber or any confined space.</p>
<i>Safety Equipment</i>	<p>The TZ shall provide employees with the following equipment, as and when required, to use while working in a confined space:</p> <ol style="list-style-type: none"><li>1. Combustible gas detection equipment,</li><li>2. Oxygen test equipment,</li><li>3. Toxicity test equipment,</li><li>4. Self-contained air breathing equipment,</li><li>5. Safety harness or wrist straps,</li><li>6. Protective clothing,</li><li>7. NIOSH approved face mask,</li><li>8. Protective head gear,</li><li>9. Portable radio.</li></ol>

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Subject: **WORKING IN CONFINED SPACE**

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**REFERENCE**

The supervisor(s) shall maintain a list of employees who have received proper training and are competent to carry out the required tests of the atmosphere in the siphon chamber or any other confined spaces. The supervisor(s) shall review this list as required and forward an updated copy to the Human Resources Branch.

Gas Tech Readings Confined Space Form

Equipment Lockout/Tagout Policy, SAFE-013

**OFFICIAL POLICY**

Section: Safety

Subject: **EQUIPMENT LOCKOUT/TAGOUT****PURPOSE**

Most industrial accidents are caused by the uncontrolled release of hazardous energy. This policy is aimed at preventing such accidents by advising all workers of the importance of energy control and providing the necessary instructions to apply energy isolation and lockout/tagout procedures.

**POLICY**

For the purpose of this policy, energy sources may be mechanical, electrical, hydraulic, pneumatic, gravitational or radiation.

Under Section 42, 75 and 76 of the Industrial Establishment Regulation, R.S.O. 1990, of the Occupational Health and Safety Act, an employee shall disconnect and lock out all sources of energy on electrical or mechanical equipment before installing, undertaking repairs to or servicing them.

Each Branch/Unit shall develop, implement and maintain written lockout/tagout procedures, where applicable. The procedures shall make provisions that all sources of energy must be removed or isolated from equipment which is to be installed, repaired, cleaned or inspected.

When developing written lockout/tagout procedures, supervisory staff should consider energy or contamination from electrical, mechanical or chemical sources, liquids, gases or vapours under pressure. Other factors to consider include:

1. The safe release of stored energy and/or material from equipment;
2. Design or installation of new equipment shall provide the capability for lockout, tagout or isolation from all energy sources;
3. Physically blocking equipment to prevent accidental movement.

**DEFINITIONS**

**Lockout** is a method of keeping equipment from being set in motion and endangering workers.

**Tagout** is placing an energy isolating device in the safe position with a warning attached to it.

**PROCEDURE**

Lockout/tagout procedures are required for any equipment where a worker may be at risk from electrical shock or burns, steam, chemical exposure or mechanical energy which are hydraulic or pneumatic in nature. The risk to the worker may result from the accidental start-up of equipment, routine maintenance (scheduled or unscheduled), installation or repair.

*Posted*

Written lockout/tagout procedures are to be posted and procedures enforced in all locations where such procedures would be needed. Employees who are



Subject: **EQUIPMENT LOCKOUT/TAGOUT**

	<p>required to work with the designated machinery or equipment shall be fully trained in these procedures. Each Unit Supervisor shall be responsible for training employees under their direction in the specific lockout/tagout procedures.</p>
<i>Personal</i>	<p>Where a lockout/tagout procedure is utilized, the employee who may be exposed to hazardous conditions shall apply their personal safety lock, while they are working on the equipment.</p>
<i>Unlocking</i>	<p>Only the employee who has applied a lock as part of a lockout/tagout procedure may remove that lock. <b>This responsibility shall not, under any circumstances, be delegated to another worker.</b> Provisions for removing a lock under unusual, or emergency situations shall be included in the written procedures. In this procedure, the Supervisor shall be responsible for removing the lock.</p>
<i>Confined space</i>	<p>Before or during entry into a confined space, an employee shall ensure that all electrical power is disconnected from its source and locked out. All pipes and systems whose contents may introduce hazardous material into the confined space shall be physically disconnected and blanked off (Refer to Working in Confined Space, SAFE-007).</p>
<i>Contractors</i>	<p>When contractors are required to work in conjunction with Zoo employees in a lockout/tagout situation, unless there is a written agreement to the contrary, the specific Zoo procedure shall take precedence. All contractors shall receive training on the lockout/tagout procedure from the qualified Zoo employee(s). In the event that the contractor's lockout/tagout procedure is adopted, Zoo employees shall receive the required training under the direction of the contractor.</p>
<b>REFERENCES</b>	<p>Occupational Health and Safety Act Working in Confined Space, SAFE-007</p>



OFFICIAL POLICY

Section: Safety

Subject: CONTRACTOR SAFETY

**PURPOSE**

This policy outlines guidelines for contractors and their employees to comply with the requirements set out in the Occupational Health and Safety Act (RSO 1990) and Regulations, as well as the TZ Occupational Health & Safety Policy (SAFE-001).

**POLICY**

Contractors/sub-contractors who operate on the Zoo property shall comply with the Occupational Health and Safety (OHS) Act and the Occupational Health & Safety Policy of the TZ to promote a safe working environment. Employees of the TZ shall notify the Security & Safety Manager of any infractions of these regulations.

**PROCEDURE**

*Contractor's obligation*

The Financial Services Branch of the TZ will provide each contractor, working on site, with a list of contractor obligations under the Occupational Health and Safety Act and the requirements of the TZ. (Appendix I).

*Liaison with contractors*

The Project Co-ordinator (refer to the Projects Policy ADM-006) shall be the designated Management representative of the TZ responsible for liaising with any contractors working on site and for co-ordinating major projects. For other work on site, the Cost Centre Manager (or designate) requisitioning the work will assume the responsibilities of the "Project Co-ordinator".

*Discussion of contractor's obligation*

The Project Co-ordinator shall ensure that a meeting is held with the successful contractor and sub-contractor(s) before any work begins. This meeting, comprising appropriate representatives from the TZ and the contractor, will provide a forum to discuss the provisions of the OHS Act, the TZ Occupational Health & Safety Policy (SAFE-001), environmental considerations and specific Contractors' Obligations. (Appendix I).

*Compliance with Occupational Health and Safety Act*

The Project Co-ordinator shall be responsible for the liaising with the contractor on health and safety and environmental issues and, together with the Security & Safety Manager (or designate), for ensuring that the contractor comply with the OHS Act and the TZ Occupational Health & Safety Policy. Any health and safety hazards to TZ employees, or the employees of the contractor/sub-contractor must be reported in accordance with the Health & Safety Hazard Reporting Policy, SAFE-002, to the Security & Safety Branch.

*Zoo staff involvement*

Zoo staff who are assigned to specific tasks on a project and are completing work which is not part of the contractor's contractual obligations and/or performing work that requires their specialized skills, shall continue to take direction from Zoo Management only, in all matters, including workplace health and safety.

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**Subject: CONTRACTOR SAFETY**

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*Loaning of equipment*

In exceptional circumstances only, with the approval of both the Project Co-ordinator and the Facilities & Services Manager, the Zoo may loan equipment to contractors to expedite the work on a specific project or a specialized task. The TZ shall only loan equipment which is in safe operating condition to contractors who are proven competent in its operation. The contractor shall be responsible for returning borrowed equipment in safe operating condition. At Management's discretion, a contractor may be required to post a bond to cover the value of borrowed equipment.

*Materials*

Except in extra-ordinary circumstances, the Zoo shall not transfer building materials to contractors. A written permission signed by both the Project Co-ordinator and the Facilities & Services Manager is required in these exceptional cases. If the Project Co-ordinator and the Facilities & Services Manager determine that a transfer of building materials is warranted, the contractor shall make payment for them in full to the Zoo in advance.

**REFERENCE**

Appendix I - Health & Safety Contractors' Obligations Occupational Health & Safety Policy, SAFE-001  
Health & Safety Hazard Reporting Policy, SAFE-002  
Projects Policy, ADM-006

Section: Safety

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Subject: **CONTRACTOR SAFETY**

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### **HEALTH & SAFETY**

#### **Safety Requirements:**

The Contractor shall conform to and enforce strict compliance with the Construction Safety Act, and Regulations made under that Act.

The Contractor, for purposes of the Occupational Health and Safety Act, will be designated as the Constructor for this project and will assume all of the responsibilities of the Constructor set out in that Act and its regulations.

It is mandatory that the successful Contractor and sub-contractor(s) attend a pre-construction meeting regarding the Occupational Health and Safety Act and relevant Zoo policies.

Specifically, it is the responsibility of the Contractor:

- a) To designate and advise the Project Co-ordinator of the name of the agent of the Contractor who is responsible to monitor the construction work site to ensure compliance with the OHS Act and the TZ Occupational Health & Safety Policy and to initiate corrective action to ensure compliance.
- b) To advise the Toronto Zoo of any designated substances, as defined by the OHS Act, to which their workers or Zoo employees may be exposed. It is the responsibility of the Contractor to ensure compliance with the designated substance regulations to reduce or eliminate worker exposure.
- c) To ensure that all work site accidents are promptly investigated to determine cause and that first aid is administered as required for all work related injuries. A written report of all such accidents shall be forwarded to the TZ Project Co-ordinator by the contractor which will include the corrective action taken to prevention of further accidents.
- d) To ensure that all hazardous materials, as defined by the WHMIS Regulation, brought on to the work site adhere to the WHMIS labeling, storage, safe handling, as use requirements and that all workers under the supervision of the Contractor be trained to safely use these materials.
- e) To supply, where specified by the OHS Act, appropriate safety and personal protective equipment and that all workers under the supervision of the Contractor be trained in the use of this equipment.
- f) To ensure, where applicable under the OHS Act, that Joint Health and Safety Committees, worker safety representatives or worker trade representatives are functioning on any work site established at the Toronto Zoo. The Contractor's Joint Health and Safety Committees, worker or

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**Subject: CONTRACTOR SAFETY**

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trade representatives shall inform the Project Co-ordinator of all outstanding issues which may affect the health and safety of Zoo employees.

**Contractors Working In The Vicinity Of Animal Containments**

- a) Contractors, Sub-contractors or their employees are not allowed, without the approval of the Manager of Animal Care, or their designate:
  - I. To enter any paddock, holding cage or other enclosure in which an animal of any kind is housed.
  - II. To attempt at any time or in any circumstance, to touch, handle or otherwise manipulate any animal.
  - III. To cross safety barriers or enter non-public areas without prior approval as outlined above.
- b) Anyone who fails to comply with the above instructions will be considered in breach of their contract and escorted from Toronto Zoo property.
- c) In addition, a contractor, or their employee, may be fined by the Ministry of Labour, under the Occupational Health and Safety Act.

**Designated Substances And Zoo Contractors****(a) SILICA (Designated Substance Assessment Completed)**

Silica is used by the Animal Care staff in a number of animal displays in various locations. The Occupational Health and Safety Division from the City has conducted air sampling on two different occasions and found exposure levels to be well within the Time Weighted Average Exposure Level (TWAEEL) deemed acceptable under the Regulation Respecting Silica-Occupational Health and Safety Act.

**(b) ISOCYAN**

Isocyanates are part of some paint products used by the Graphics Unit in the screening process. The Occupational Health and Safety Division from the City has conducted air quality tests and found the TWAEEL to be well within acceptable levels set out by the Regulation Respecting Isocyanates-Occupational Health and Safety Act.

**(c) MERCURY (Designated Substance Assessment Completed)**

A small quantity of mercury is on site in the form of thermometers in various locations and is found in the culture counter used in the Animal Health Centre. With the small levels present, the exposure risk to workers is within the guidelines established under the Regulation

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**Subject: CONTRACTOR SAFETY**

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Respecting Mercury-Occupational Health and Safety Act. In event of a thermometer breaking mercury clean-up kits are available from Animal Health.

(d) **ASBESTOS (Designated Substance Assessment On-going)**

As of 1991-09-17 asbestos has been located in the following areas:

I. Pavilions, Maintenance Centre (North Service) and Members & Visitors Centre (Old Administration).

Asbestos is a component of the insulation in boilers and emergency generators. The insulation is covered by duct cloth fabric and does not present a risk to workers if left undisturbed.

II. Laboratory Fume Hood, Animal Health Centre (South Service Building).

The laboratory fume hood has been inspected by MacLaren Plansearch Ltd. and has 10 to 20% Chrysotile or non-friable asbestos.

III. Valley Halla and Calf Barns.

Preliminary inspections indicate that asbestos is present in both these buildings in the form of pipe insulation. The calf barn insulation has been removed and disposed of in accordance with the Regulation Respecting Asbestos-Occupational Health and Safety Act. The asbestos in Valley Halla is located in the boiler room and is wrapped in a heavy duct material and sealed. If left undisturbed this material does not present an immediate health risk.

**OFFICIAL POLICY**

Section: Safety

Subject: **VEHICLES ON SITE****PURPOSE**

The following guidelines are intended to regulate vehicle traffic on public used pathways during regular business hours so that Zoo guests may safely enjoy their visit.

**POLICY**

The Toronto Zoo restricts vehicular traffic on site at all times to essential vehicles only. **Supervisors and Managers will be responsible to limit the use of vehicles during operating hours to the minimum possible and will be required to justify their use, when requested.** Staff are to report any infractions to the Security & Safety Branch which is responsible for the enforcement of this policy.

**PROCEDURE**

All vehicles are restricted to service roads during hours when the public has access to the Zoo. Appendix I indicates the service roads accessible at all times by Zoo staff (solid line). Shared roads (indicated with dashes) are accessible only when required for operational use. Exceptions to this policy are as follows:

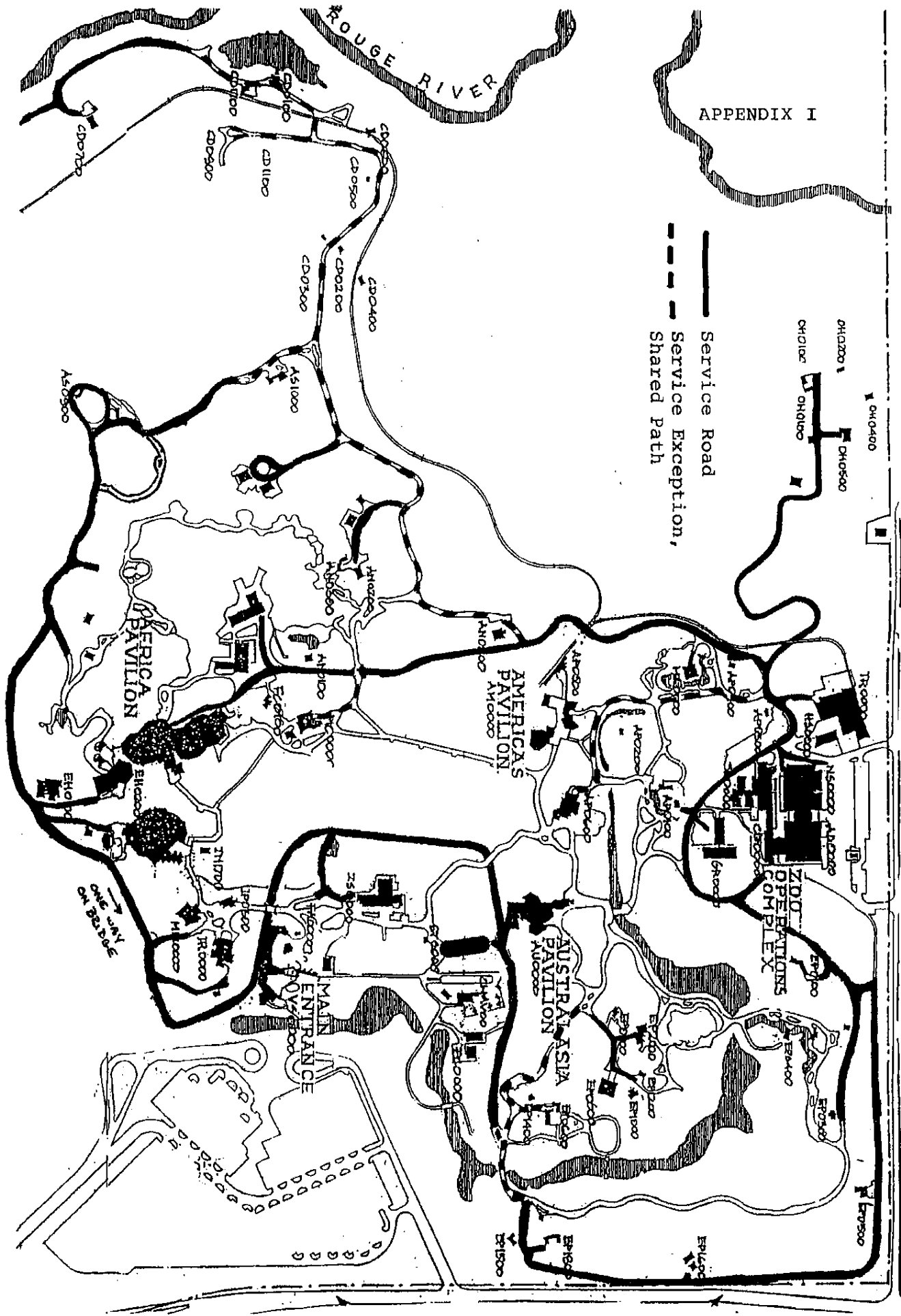
- Zoomobiles operating on their normal route;
- Public Relations, Development and other personnel when conducting site tours (normally by golf cart);
- Security & Safety golf carts for the patrol and response to calls for assistance. Security & Safety utility vehicles when responding to calls;
- Material Collections and Horticulture vehicles when conducting specific duties requiring vehicle use (e.g. pathway maintenance, grass cutting, litter pick-up);
- Duty Director and Senior Management staff for site supervision purposes;
- Construction vehicles where there is no alternative but to enter onto the Zoo's public pathways during business hours. In this case, the Facilities & Services Manager must specifically approve the vehicle's access to the site;
- Other vehicles will be permitted on public pathways in exceptional circumstances only (e.g. for the health and safety of the public, staff or animals) and must be specifically approved by the Security & Safety Manager or Supervisor.

Subject: **VEHICLES ON SITE**

<i>Escorts</i>	Security & Safety or Facilities & Services personnel (as appropriate) will escort approved contractor vehicles to and from site locations.
<i>Deliveries to concessions</i>	Concessions (including Food Services and Rides) and Retail shall complete movement of equipment and/or merchandise to their respective outlets that are not accessible by service roads before 0930 hours each day. As an alternative, deliveries must be postponed until admission to the public is closed.
<i>Restricted Areas</i>	Vehicles that are authorized to enter public pathways (other than in an emergency situation, for cash escorts, or for snow removal) will not permitted to be driven or parked in the front courtyard, and the front bridge and entrance area during hours in which the public have access.
<i>Prohibited Areas</i>	<p>Prohibited areas to vehicle traffic include the boardwalk pathway to the Africa Pavilion and in the vicinity of animal demonstrations, including the ponies, camels and birds of prey. Not only are such locations congested with pedestrian traffic, but also the engine noise may cause fear and stress to the animals. Exceptions will be made with the approval of the Security &amp; Safety Manager or Supervisor (e.g. for emergency access).</p> <p>Generally, vehicles are prohibited from grassed areas. However, when it is necessary to use golf carts on the grass, drivers must vary their path of travel to avoid landscape damage due to repeated use over the same track.</p>
<i>Parking Areas</i>	Golf carts and small service vehicles may be parked at designated locations off of the main service road encompassing the Zoo. Access gates to public pathways must remain clear at all times for emergency purposes.
<i>Vehicle Bridge Restrictions</i>	One-way restriction exists for the bridge behind Indo-Malaya and Malayan Woods Pavilions (as signed). Pedestrian access on this bridge is prohibited.
<i>Care and caution</i>	<p>All drivers are reminded that they must drive slowly, maximum 16 km/hr on site. Drivers are to exercise due care, caution and consideration for the public, other vehicles, when passing animals on the roadway, and must come to a complete stop at public intersections. <b>ANIMALS AND PEDESTRIANS ALWAYS HAVE THE RIGHT OF WAY.</b> As an added safety precaution, drivers are required to use 4-way flashers or headlights on site as a visual warning to pedestrians, when on public pathways.</p> <p>Zoomobiles are to be given right of way when met by other vehicles.</p>



APPENDIX I





OFFICIAL POLICY

Section: Safety

Subject: HOT WORK

**PURPOSE**

This policy is intended to provide safe work procedures and a permit system when undertaking any temporary repair, maintenance or construction operation that involves open flames or produces heat and/or sparks.

**POLICY**

For the purpose of this policy, hot work includes, but is not limited to, brazing, cutting, grinding, soldering, pipe thawing, torch-applied roofing, and welding. This policy is to apply to all hot work performed at the Toronto Zoo with the exception of the Operations Complex work, where controlled conditions are in place.

**PROCEDURE**

A hot work permit is required for any temporary repair, maintenance or construction operation involving open flame or producing sparks.

*Alternative procedures*

If there is a practical and safer way to do the job without hot work, that method is to be used.

*Authorization*

No hot work is permitted without authorization, in the form of a signed hot work permit, from one of the following:

1. Security & Safety Supervisor for work performed by Contractors.
2. A Supervisor in the Facilities & Services Branch, for work performed by their staff. Security & Safety Supervisor in the absence of a Facilities & Services Supervisor.
3. 3. Project Management Supervisor for work performed by their staff. Security & Safety Supervisor in the absence of the Project Management Supervisor.

This permit will be valid for a maximum of one shift, or eight hours, whichever is shorter. After this period, another permit must be obtained from and signed by the above, as appropriate, before any hot work can continue.

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**Subject: HOT WORK**

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*Safety precautions*

Specific fire fighting equipment and protection material will be required at the hot work site before any work is started. This is to be discussed with the Supervisor when planning the work. Personal protective equipment must be worn, including, but not limited to, welding capes, gloves, goggles.

No hot work is permitted without a designated fire watch present. If unsafe conditions are observed during the hot work operations, the work will be stopped until the hazard can be neutralized or eliminated.

*Equipment*

All hot work equipment is to be in proper working order and in a firesafe condition. An inspection of the equipment by the staff/contractor is to be conducted before the hot work permit is issued. Any unsafe equipment is to be removed from the work area.

Any equipment or material that is to be stored in the facility overnight must be properly secured in an area designated by the appropriate Supervisor.

*Contractors*

When contractors are required to perform hot work in facilities shared with Zoo staff and or operations, it is mandatory that they strictly comply with the Zoo's hot work procedures and permit system. This requirement will be incorporated into the specifications. The contractor will arrange through the Project Co-ordinator for hot work permits. The hot work procedure will be reviewed with contractors at the start-up meeting.

**REFERENCE**

Appendix 1 - Hot Work Permit System

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Subject: **HOT WORK**

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TORONTO ZOO

**HOT WORK PERMIT SYSTEM**

1. Staff/Project Co-ordinator notify Security & Safety Branch of requirement for a hot work permit. Twenty-four (24) hours notice to be provided.
2. Security & Safety Supervisor for contract work or Unit Supervisor for Zoo staff work reviews the proposed work with the Staff/Contractor and completes the hot work permit as follows:
  - (a) identifies location and nature of hot work;
  - (b) identifies whether it will be done by an employee or contractor, and the responsible persons;
  - (c) confirms checklist of precautions for permit;
  - (d) identifies expiration date and time (not beyond one work shift);
  - (e) identifies emergency notification procedures; and
  - (f) signs and issues the permit.
3. Employee or Contractor hangs the permit in a visible place in the work area.
4. While the hot work proceeds, the fire watch maintains a constant vigil for stray sparks, ignition or fire hazards, and is ready to provide initial fire response. Fire watch to be provided by work unit or contractor undertaking work.
5. Once the work is completed, the fire watch remains in the area for one hour, and carefully inspects the work and the adjacent area for smoldering fires. The inspection extends to floors above and below the work and adjacent rooms. The fire watch then signs the permit and leaves it posted.
6. The hot work area is monitored for an additional three hours.
7. When the monitoring period has ended, the Security & Safety Supervisor or a designate conducts a final inspection of the area and signs the permit. The permit is removed and is retained by the Security & Safety Branch as a record of the work.

# HOT WORK PERMIT

**BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?  
IS THERE A SAFER WAY?**

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Torch Applied Roofing and Welding.

## INSTRUCTIONS

1. Firesafety supervisor:
  - A. Verify precautions listed at right (or do not proceed with the work).
  - B. Complete and retain Part 1. (Part 1A is a copy for expanded hot work awareness).
  - C. Issue Part 2 to person doing job.

HOT WORK BEING DONE BY

EMPLOYEE

CONTRACTOR

DATE

JOB NUMBER

LOCATION/BUILDING AND FLOOR

NATURE OF JOB

NAME OF PERSON DOING HOT WORK

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

SIGNED (Firesafety Supervisor/Operations Supervisor)

PERMIT  
EXPIRES

DATE

TIME

AM  
PM

**NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM. USE AS APPROPRIATE FOR YOUR FACILITY.**

**FM** Global

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## PART 1

### REQUIRED PRECAUTIONS CHECKLIST

- Available sprinklers, hose streams and extinguishers are in service/operable.
- Hot Work equipment in good repair.
- Requirements within 35 ft (11 m) of work**
- Flammable liquids, dust, lint and oily deposits removed.
- Explosive atmosphere is area eliminated.
- Floors swept clean.
- Combustible floors wet down, covered with damp sand or fire-retardant sheets.
- Remove other combustibles where possible. Otherwise protect with FM approved welding pads, blankets, and curtains, fire-retardant tarpaulins or metal shields.
- All wall and floor openings covered.
- FM Approved welding pads, blankets, and curtains installed under and around work.
- Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.
- Work on walls, ceilings or roofs**
- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls, ceilings or roofs are moved away.
- Work on enclosed equipment**
- Enclosed equipment cleaned of all combustibles.
- Containers purged of flammable liquids/vapors.
- Pressurized vessels, piping and equipment removed from service, isolated and vented.
- Fire watch/Hot Work area monitoring**
- Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.
- Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.
- Fire watch is trained in use of equipment and in sounding alarm.
- Fire watch may be required in adjoining areas, above and below.
- Monitor Hot Work area for 3 hours after job is completed.

Other Precautions Taken:

# HOT WORK PERMIT

**BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?  
IS THERE A SAFER WAY?**

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Torch Applied Roofing and Welding.

## INSTRUCTIONS

1. Firesafety supervisor:
  - A. Verify precautions listed at right (or do not proceed with the work).
  - B. Complete and retain Part 1.  
(Part 1A is a copy for expanded hot work awareness).
  - C. Issue Part 2 to person doing job.

## PART 1A

### REQUIRED PRECAUTIONS CHECKLIST

- Available sprinklers, hose streams and extinguishers are in service/operable.
- Hot Work equipment in good repair.
- Requirements within 35 ft (11 m) of work**
- Flammable liquids, dust, lint and oily deposits removed.
- Explosive atmosphere in area eliminated.
- Floors swept clean.
- Combustible floors wet down, covered with damp sand or fire-resistant sheets.
- Remove other combustibles where possible. Otherwise protect with FM approved welding pads, blankets, and curtains, fire-resistant tarpaulins or metal shields.
- All wall and floor openings covered.
- FM Approved welding pads, blankets, and curtains installed under and around work.
- Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.

### Work on walls, ceilings or roofs

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls, ceilings or roofs are moved away.

### Work on enclosed equipment

- Enclosed equipment cleaned of all combustibles.
- Containers purged of flammable liquids/vapors.
- Pressurized vessels, piping and equipment removed from service, isolated and vented.

### Fire watch/Hot Work area monitoring

- Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.
- Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.
- Fire watch is trained in use of equipment and in sounding alarm.
- Fire watch may be required in adjoining areas, above and below.
- Monitor Hot Work area for 3 hours after job is completed.

### Other Precautions Taken:

\_\_\_\_\_

### HOT WORK BEING DONE BY

- EMPLOYEE  
 CONTRACTOR

DATE

JOB NUMBER

LOCATION/BUILDING AND FLOOR

NATURE OF JOB

NAME OF PERSON DOING HOT WORK

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

SIGNED (Firesafety Supervisor/Operations Supervisor)

PERMIT  
EXPIRES

DATE

TIME

AM  
PM

**NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM. USE AS APPROPRIATE FOR YOUR FACILITY.**



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# WARNING!

## HOT WORK IN PROGRESS WATCH FOR FIRE!

### INSTRUCTIONS

1. Person doing Hot Work: Indicate time started and post permit at Hot Work location. After Hot Work, indicate time completed and leave permit posted for Fire Watch.
2. Fire Watch: Prior to leaving area, do final inspection, sign, leave permit posted and notify Firesafety Supervisor.
3. Monitor: After 3 hours, do final inspection, sign and return to Firesafety Supervisor.

### PART 2

HOT WORK BEING DONE BY	
<input type="checkbox"/> EMPLOYEE <input type="checkbox"/> CONTRACTOR _____	
DATE _____	JOB NUMBER _____
LOCATION/BUILDING AND FLOOR _____	
NATURE OF JOB _____	
NAME OF PERSON DOING HOT WORK _____	
I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.	
SIGNED (Firesafety Supervisor/Operations Supervisor) _____	
TIME STARTED _____	TIME FINISHED _____
<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
<b>PERMIT EXPIRES</b>	DATE _____ TIME _____ AM PM
<b>FIRE WATCH SIGNOFF:</b> Work area and all adjacent areas to which sparks and heat might have spread were inspected during the watch period and were found fire safe.	
Signed: _____	
<b>FINAL CHECKUP:</b> Work area was monitored for 3 hours following Hot Work and found fire safe.	
Signed: _____	

### REQUIRED PRECAUTIONS CHECKLIST

- 
- Available sprinklers, hose streams and extinguishers are in service/operable.
  - Hot Work equipment in good repair.
- Requirements within 35 ft (11 m) of work**
- Flammable liquids, dust, lint and oily deposits removed.
  - Explosive atmosphere in area eliminated.
  - Floors swept clean.
  - Combustible floors wet down, covered with damp sand or fire-resistant sheets.
  - Remove other combustibles where possible. Otherwise protect with FM approved welding pads, blankets, and curtains, fire-resistant tarpaulins or metal shields.
  - All wall and floor openings covered.
  - FM Approved welding pads, blankets, and curtains installed under and around work.
  - Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.
- Work on walls, ceilings or roofs**
- Construction is noncombustible and without combustible covering or insulation.
  - Combustibles on other side of walls, ceilings or roofs are moved away.
- Work on enclosed equipment**
- Enclosed equipment cleaned of all combustibles.
  - Containers purged of flammable liquids/vapors.
  - Pressurized vessels, piping and equipment removed from service, isolated and vented.
- Fire watch/Hot Work area monitoring**
- Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.
  - Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.
  - Fire watch is trained in use of equipment and in sounding alarm.
  - Fire watch may be required in adjoining areas, above and below.
  - Monitor Hot Work area for 3 hours after job is completed.

### Other Precautions Taken:

 \_\_\_\_\_  
 \_\_\_\_\_

# WARNING!

**HOT WORK IN PROGRESS WATCH FOR FIRE!**

**IN CASE OF EMERGENCY:**

**CALL:** \_\_\_\_\_

**AT:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# WARNING!







OFFICIAL POLICY

Section: Safety

Subject: SCAFFOLD & LADDER SAFETY

<b>PURPOSE</b>	The purpose of this policy is to provide guidelines for the safe use of scaffolding and ladders on the Zoo site, taking into consideration staff and guest safety and the welfare of animals.
<b>POLICY</b>	The Zoo will follow, without exception, the standards set by the province for the safe use of scaffolding and ladders (Industrial Establishment 847 Regulation 714 for Construction Projects and Regulation 859 for Window Cleaning). In addition, further precautions will be taken, reflecting the particular characteristics of the site.
<b>PROCEDURE</b>	The following legislative requirements will be followed; it is the responsibility of the supervisor to know the requirements and the manufacturer's instructions:
<i>SCAFFOLDS</i>	No scaffold shall be loaded in excess of the load that it is designed to bear. The load limit shall be indicated on the scaffold.
<i>Load limits</i>	
<i>Components</i>	Every scaffold shall have its component parts, including diagonal braces, horizontal members, sound footings, fittings and gear installed according to manufacturer's instructions. Connecting devices between frames and safety catches on all hooks shall be adequately secured at vertical intervals not exceeding three times the least lateral dimension.
<i>Brakes</i>	Castor wheels shall have the brakes applied when an employee is on a scaffold.
<i>Overturning Prevention</i>	A scaffold mounted on castor wheels shall be equipped with guy wires or outriggers to prevent overturning. A scaffold over 2.4 m above the base shall not be moved with a worker on it. Workers may remain on the scaffold if it is being moved on a firm level ground and below 2.4 m above the base.
<i>Erection and dismantling</i>	Only a competent worker shall supervise the erection, alteration, or dismantling of a scaffold.
<i>Inspection</i>	If the height exceeds 10m, a competent worker, supervisor, or a professional engineer, shall inspect the scaffold before it is used, to ensure that it is erected in accordance with the design drawings. The person carrying out the inspection shall state in writing, to be displayed on the scaffold, whether the scaffold is erected in accordance with design drawings.
<i>Specifications</i>	A scaffold platform shall be at least 460 mm wide, be provided with a guardrail and no unguarded openings, have a means of access, and have each component secured against slipping from its supports.

Subject: **SCAFFOLD & LADDER SAFETY***General safety precautions*

Always have at least two persons to erect, work on or dismantle scaffolds. Do not use ladders or boxes on top of the platform. During erection or dismantling, use temporary braces or guardrails where practical. Under windy conditions, tie additional ropes or cables to a rigid structure, or do not use the scaffold. Do not erect the scaffold near live electrical hazards or moving machinery. Use caution when wheeling on rough or uneven ground. Raise and lower components by rope. Do not lean ladders against a scaffold. Staff on the scaffold and on the ground are to wear head protection.

*Maintenance and storage*

Take care not to bend, force, or otherwise damage the aluminum parts. If parts are damaged or not working, staff are to report it to their supervisor so repairs can be made. Keep all parts clean. If locking hinges, spring loaded pins, interlocking clips or castor locks are stuck, clean and/or lubricate them. Upon return of the scaffold to the storage area, check and sign off the attached checklist (Appendix I).

*Record keeping:*

Scaffolds are to be inspected monthly when in use.

**LADDERS**

Inspect ladders before each use. Check for unsafe rungs, braces, rails and locking mechanisms. Tag defective ladders and take out of service.

*Inspections**Load limits*

Use a ladder designed for your task. Only one person should be on a single-width ladder and only one person on each side of a double-width ladder.

*Setup*

Locate the base on firm footing using slip-resistant feet or secure blocking. Extend the ladder at least 1m above the landing platform. Rest both rails on the top support and secure the ladder to prevent slippage. Place the ladder 1/4 of the working length away from the base of the structure.

*General safety precautions*

Keep ladder away from electrical wires. When using a ladder for electrical work, use only a non-conducting ladder specified for such use.

Set up barricades and warning signs when using a ladder in or near a passageway, driveway or doorway.

When working at a height of more than 3m or when working with both hands, tie yourself off with a safety harness.

For ladders more than 3 m, work with an assistant for moving and setting up ladders, and to steady the ladder when using it.

Hoist materials or attach tools to your belt, do not carry objects in your hands. Do not work from the top three rungs of an extension ladder, or the top step of a stepladder.

Maintain three-point contact with the ladder at all times. Grasp the rungs

---

Subject: **SCAFFOLD & LADDER SAFETY**

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when climbing, not the rails. Keep the centre of your body within the side rails.

**REFERENCE**

Appendix I - Inspection Chart

Subject: **SCAFFOLD & LADDER SAFETY**

References	Date of Inspection								
Condition of casters/wheels									
Condition of brakes									
Condition of toeboards									
Midrails undamaged & in place									
Trap door in good repair									
Platform									
Outriggers									
Handrails									
Welds or bolts									
Jacks/leveling screws									
Guard Rails									
Cracks, splinters, burns									

**Y** Acceptable

**N** Unacceptable

To: Supervisors, Managers and Directors

From: Bill Romberg

Subject: **2012 Smog Alerts**

Date: 2012-06-19

---

**Corporate Smog Alert Response Plan**

Toronto Zoo

**1998-04-29**

(Reviewed and Updated 2012-06-16)

In keeping with the Vision Statement and Green Initiative of the Toronto Zoo we would like to remind all staff members of the Smog Alert Protocol and Response Plan. With warmer weather approaching, be prepared for a Smog Alert announcement at anytime throughout the season and please ensure your staff complies with the following restrictions in activities, which the Zoo committed to in 1998.

City staff or the Ministry of the Environment will notify Control when an Alert is announced. The Security & Safety Branch will make radio announcements, post signs at staff entrances and alert Computer Services, who will post a news flash on the system. This advanced notice will give you more time to implement respective work unit plans. Supervisors will be responsible for informing their staff, and having alternate work available to replace restricted activities.

The following is a list of activities that will require special consideration on alert days:

- ◆ Pesticide spraying
- ◆ Non-essential use of vehicles on and off-site for deliveries and errands
- ◆ Use of oil-based paints, solvents and cleaners unless needed for disinfection
- ◆ Use of horticultural equipment & sweepers except where required for human/animal health and safety
- ◆ Refueling of vehicles
- ◆ Road resurfacing
- ◆ Adjustments to the Air Conditioning systems
- ◆ Non-emergency veterinary surgeries requiring anaesthetic gases
- ◆ Testing of emergency generators
- ◆ Washing of vehicles and filters

## **Corporate Smog Alert Response Plan**

### **Pesticide Spraying**

Pesticides will not be sprayed on alert days by Zoo staff or by the pest control contractor on Zoo property. Staff generally use pesticides only when bio-control agents or management methods are not effective, using the safest possible spray equipment.

### **Nonessential Vehicle Use**

The majority of vehicle trips take place within our site. Wherever possible, staff will walk or use bicycles if tools and equipment do not need to be transported. Nonessential deliveries on site and errands off site will be postponed. Essential trips such as Security Patrol, Veterinary Ambulance, animal food deliveries, animal shipments and business trips will still take place. The Zoomobiles will still operate, as they are an expected service and to curtail it would result in substantial lost revenue.

### **Use of Oil-based Paints, Solvents, Cleaners**

Use of oil-based paints and solvents can be postponed on alert days. We have been replacing oil based paints with water based products. We will try to avoid using cleaners with solvents or VOC's. Floor Strippers, baseboard strippers, gum-remover and acidic toilet bowl cleaners are the only harsh products still in use by custodial staff and their use is minimal and not used on Smog Alert Days. Major cleaning jobs can be postponed for a day. We have replaced many cleaning products with biodegradable EcoLogo products, and replacing products with new products that utilise renewable plant based raw material.

### **Use of Gas Powered Equipment**

2 cycle gas powered horticulture equipment will not be used on alert days. The only exceptions will be use of chainsaw for emergency tree trimming or removal where safety is a factor, trimming to prevent hotwires from shorting out, emergency use of generator for veterinary field work, and use of a gasoline powered pump for the water wagon (used in areas without irrigation system to prevent loss of trees, shrubs and annual plantings). Staff replace 2 cycles with 4 cycle equipment as it comes up for replacement. Staff members have received training on how to service small equipment to reduce pollution.

Only essential trips with gasoline powered golf carts will be authorized. Many golf carts are electric, and in most cases, new carts purchased will be electric and solar powered.

### **Street Sweeping**

Street sweeping will take place prior to 0900hrs on Smog Alert days using our new sweeper with dust control features or our self-propelled propane unit. These sweepers will not be used after 0900hrs on alert days, unless the service implications are too great.

### **Refuelling**

Security & Safety work overnight and could refuel all patrol vehicles then. Other staff will be instructed to fuel vehicles the day before (if indeed the vehicle will be used on the alert day), when an alert is expected. There may be an occasional exception for urgent needs.

### **Road Resurfacing**

This is done by outside contractors. Supervisors will work with contractor schedules where possible considering project deadlines, safety issues or contract implications.

### **Air Conditioning**

We will make an effort to raise the setting for air conditioning in offices. Most offices do not have windows that open, and a reasonably comfortable working environment must be maintained. While most air conditioning can be adjusted centrally, staff will need to be advised not to use manual overrides.

Air conditioning must be maintained in some animal areas, in sections of the Family Centre and some areas with computers, electronics, photo copiers, paper and other specialized equipment.

### **Other Smog Reduction Activities**

Staff are also encouraged to reduce emissions on smog alert days by accommodating schedules for car pooling, encouraging bicycle and TTC use, permitting telecommuting where feasible and granting lieu and vacation requests on short notice where operations permit.

You can find out more about these advance notices by calling Toronto Public Health's phone line at 416-392-0808. You can also log onto the MOE's website at [www.airqualityontario.com](http://www.airqualityontario.com) and join the smog alert network. Anyone subscribing to this free on-line service will receive an automatic e-mail whenever the MOE issues a smog alert. If you would still like to know where and when a Smog Alert has been issued, recorded messages are available by calling: 416-246-0411 or 1-800-387-7768 (English recording), or 1-800-221-8852 (French recording).

### Notification Contact -

Toronto Zoo Control Centre  
Email: [secgroup@torontozoo.ca](mailto:secgroup@torontozoo.ca)  
Ph: 416-392- 5901 (days and early evenings)

Thank you,

Bill Romberg  
Utilities Supervisor  
Facilities and Services  
Toronto Zoo  
361A Old Finch Ave.  
Scarborough, ON M1B 5K7  
Ph. 416- 392-5995  
Fax 416-392-5934

Email: [wromberg@torontozoo.ca](mailto:wromberg@torontozoo.ca)



**Toronto Zoo Accessible Customer Service Training Requirements:  
Contractors, Consultants and other Service Providers**  
(Accessibility Standard for Customer Service, O. Reg. 429/07, AODA 2005)

The Toronto Zoo supports the goals of the Accessibility for Ontarians with Disabilities Act (AODA), 2005 and is committed to providing equal treatment and equitable benefits of Toronto Zoo services, programs and facilities in a manner that respects the dignity and independence of people with disabilities.

Under section 6 of the Accessibility Standard for Customer Service, O. Reg. 429/07 (Appendix A), established by the AODA, the Toronto Zoo must ensure that employees, volunteers and all other personnel, including third party contractors, who deal with members of the public or other third parties on behalf of the Toronto Zoo or, who participate in developing Toronto Zoo policies, practices or procedures on the provision of goods and services receive training on accessible customer service.

All personnel must complete training that meets the requirements of the Accessible Customer Service regulation and includes:

- An overview of the AODA
- Understanding the requirements of the Regulation
- How to interact and communicate with persons with various types of disabilities;
- How to interact with persons with disabilities who use an assistive device or require the assistance of a guide dog or other service animal or the assistance of a support;
- How to use equipment or devices available on the provider's premises or otherwise provided by the provider to people with disabilities to access goods or services; and
- What to do if a person with a particular type of disability is having difficulty accessing the provider's goods or services.

It is the responsibility of the third party contractors and other service providers to ensure that appropriate training is provided and that training records are maintained, including dates when training is provided, the number of personnel who received training and individual training records. Contractors are required to ensure that this information is available, if requested by the Toronto Zoo.

**Access an e-learning course:**

The training requirements can be fulfilled by completing the e-Learning course "Serve-ability: Transforming Ontario's Customer Service", which can be found on the Ministry of Community and Social Services website:

<http://www.mcscs.gov.on.ca/mcss/serve-ability/splash.html>

**For more information:**

How to comply with the Accessible Customer Service Standard at: [www.accessON.ca/compliance](http://www.accessON.ca/compliance)

Requirements of the Accessibility Standards for Customer Service (Ontario Regulation 429/07):  
[www.e-laws.gov.on.ca/html/source/regs/english/2007/elaws\\_src\\_regs\\_r07429\\_e.htm](http://www.e-laws.gov.on.ca/html/source/regs/english/2007/elaws_src_regs_r07429_e.htm)

## **SECTION II**

### **FORMS**

**FORM 1**  
TENDER FORM

TO: THE CHIEF OPERATING OFFICER, BOARD OF MANAGEMENT OF THE TORONTO ZOO, 361A OLD FINCH AVENUE, TORONTO, ONTARIO M1B 5K7

RE: MEMBER & GUEST SERVICES BUILDING ROOF REPLACEMENT

1.1 THIS TENDER is submitted by

Insert names and addresses of all persons or corporations (or both) submitting Tender as principals

(i) Name: \_\_\_\_\_

Address: \_\_\_\_\_

(ii) Name: \_\_\_\_\_

Address: \_\_\_\_\_

1.2 Complete whichever of (i) or (ii) is applicable and strike out other

(i) comprising the firm of \_\_\_\_\_  
carrying on business at \_\_\_\_\_

OR

(ii) a company duly incorporated under the laws of \_\_\_\_\_  
\_\_\_\_\_ and having its head office at \_\_\_\_\_

hereinafter called "the tenderer".

Insert number, Insert Municipality

The Tenderer is not\* a City of Toronto firm or resident, and for \_\_\_\_\_ years has been carrying on business in \_\_\_\_\_.

\*Strike out "not" if inapplicable

Insert each licence and category

- 1.3 The Tenderer holds the following licence(s) issued by the City of Toronto Licensing Commission:

---

---

**DEFINITIONS:**

- 2.0 All references to “Instructions to Tenderers”, “Agreement” “General Conditions”, “Bonds”, “Statutory Declarations”, “Drawings” and “Specifications” in this Tender Form are to those included or referred to in Section I and III of the Tender Package provided by the Board of Management of the Toronto Zoo to prospective Tenderers in connection –with the above-captioned construction work.

**COLLUSION:**

- 3.0 No person, firm or corporation other than the Tenderer has any interest in this Tender or in the Contract which will result if same is accepted.
- 3.1 The Tender herein is made by the Tenderer without any connection, knowledge, comparison of figures or arrangement with any other person or persons making a Tender for the Work, and is in all respects fair and without collusion or fraud.

- 3.2 No member of the City of Toronto Council or Board of Management of the Toronto Zoo and no officer or employee of the City of Toronto Corporation or Board of Management of the Toronto Zoo is, will be, or has become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise howsoever in the Contract or in the supplies, work or business in connection with the Work, or in any portion of the profits thereof, or in any of the monies to be derived therefrom.
- 3.3 If the offer set out in this Tender Form is accepted and it is subsequently discovered that Sub-paragraph (1) hereof was breached, whether prior or subsequent to such acceptance, the Board of Management of the Toronto Zoo shall be entitled to proceed under article 50 of the General Conditions in the same manner as if there had been a transfer of the Contract without the consent of the Chief Operating Officer.

If no Addenda have been issued, strike out works in parentheses; otherwise, insert number(s) of Addendum packages received.

**ADDENDA:**

- 4.0 The Tenderer has carefully inspected and examined the locality and the site of the Work, and all the Contract documents, including documents (including Addendum Packages numbered \_\_\_\_\_ and the drawings referred to therein) is satisfied that each sub-contractor referred to in clause (i) of paragraph 7 of this Tender Form is fully acquainted with the extent and nature of his part of the Work, and the Tenderer hereby agrees to the documentation of the Contract by the Contract documents.
- 5.0 The Tenderer hereby quotes and offers to enter into the Contract, execute the Contract documents as required by the Instructions to Tenderers and do all or any part of what is set out or called for in the Specifications and Drawings on the terms and conditions and under the provisions set out or called for in the Contract documents, for a total Bulk Tender Price, including HST in Canadian funds, equal to the total of the amounts in the following clauses (i) to (ii):

Insert Bulk Tender Price in block capitals and in figures.

- (i) a net contract amount of DOLLARS \$ \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Perform thermal scan on roof areas 2.6 and 2.7 to determine location of wet and/or deteriorated existing roof system requiring repair: \$           \$2,500

(ii) the Harmonized Sales Tax Payable by the Board of Management of the Toronto Zoo with respect to the Contract, which the Tenderer estimates will be on the basis of the amounts in clauses (i) \$ \_\_\_\_\_

(iii) TENDERER'S TOTAL: \$ \_\_\_\_\_

Insert total of (i) to (ii)

**BULK TENDER PRICE**

\_\_\_\_\_

5.1 The Bulk Tender Price shall be determined by the arithmetic sum of:

- (i) the amounts shown in clauses (i) to (ii) of subarticle (1) hereof; and
- (ii) the Tax described in clause (ii) of subarticle (1) hereof applied at the rate of 13% for H.S.T. to the amounts described in clause(i) hereof, without regard to the Tenderer's estimate of that Tax as shown in numerals in said clause (ii),

and the Tenderer acknowledges that

- (iii) in the case of any discrepancy between the Net Contract Amount as expressed in clause of subarticle (1) hereof in words and that Amount as expressed therein in numerals, the said numerals shall govern, and the words shall be taken as a guide to interpretation of any ambiguous or indecipherable number(s);
- (iv) the estimated Tax shown in clause (ii) of subarticle (1) hereof and "TENDERER'S ESTIMATED TOTAL" shown in clause (iii) of that subarticle are approximations only inserted for the convenience of the Tenderer, having no legal effect on the Tender and offer of subarticle (1) hereof and shall be disregarded for all purposes.

6.0 This Tender Form is accompanied by:

Strike out whichever of (i) and (ii) is inapplicable.

- (i) a certified cheque payable to the "Toronto Zoo";

If (ii) inapplicable, insert name of surety

- (ii) a Bid Bond in the required form executed by the Tenderer and

\_\_\_\_\_

whom the Tenderer proposes as the surety under Article 29 of the General Conditions in the amount of 10% of the net contract amount and if

Insert amount in WORDS and FIGURES

- (iii) the Tenderer withdraws his/its said offer during the 90-day period immediately following the deadline date for submission of Tenders, or after acceptance of his Tender, or
  - (iv) fails to comply with the terms of this Tender Form following acceptance of his said offer, then the Board of Management of the Toronto Zoo may
  - (v) retain the certified cheque referred to in clause (i) hereof; or
  - (vi) enforce the Bid Bond referred to in clause (ii) hereof by legal action,
- as the case may be.

Insert name of Surety

- 6.1 This Tender form is also accompanied by an Agreement to Bond in Form 4 as included in Section II of the Tender Package, which Agreement has been executed by being the surety proposed by the Tenderer under article 29 of the General Conditions.
- 7.0 Tenderer has attached to this Tender Form:
- (i) as Appendix 1, a complete list of the Subcontractors intended to be engaged, indicating for each subcontract the name, address and telephone number of each subcontractor, and (where applicable) the subcontractor's licence number as issued by the City of Toronto Licensing Commission. Bid Depository Subcontracts are not applicable to the contract;
  - (ii) as Appendix II, a list of Unit Prices for certain items, which shall be the Unit Prices referred to in clause (i) of subarticle 31.3 of the General Conditions and which shall also be the basis for reducing the amount owing to the Tenderer where any such item(s) is or are omitted from the Work pursuant to that article, but the Tenderer shall not be entitled to any compensation beyond the Bulk Tender Price for any such item(s) already included in the Specifications and Drawings, and Addenda thereto, as of the deadline for submission of Tenders for the Work;
  - (iii) as Appendix III, details of reductions in the Bulk Tender/Contract Price for deletions from the Work pursuant to paragraph 11.1 of the instructions to Tenderers;
  - (iv) as Appendix IV, details of increases in the Bulk Tender Price for additions to the Work pursuant to paragraph 11.2 of the Instructions to Tenderers;
  - (v) as Appendix V, details of changes to the Bulk Tender Price for substitutions in the Work pursuant to paragraph 11.3 of the Instructions to Tenderers;

Strike out this clause if inapplicable, (vi).

- (vi) as Appendix VI, details of unsolicited alternatives pursuant to paragraph 22 of the Instructions to Tenderers,
- (vii) the Statutory Declaration of Verification included in Section II of the Tender package as Form 2, duly completed and sworn as requested by Article 12 of the Instructions to Tenderers.

### **COMMENCEMENT AND COMPLETION OF WORK**

8.0 If the offer set out in this Tender Form is accepted:

- (i) the Tenderer will complete the Work fully, and surrender control of the site to the Board of Management of the Toronto Zoo no later than **Friday, 2018-10-19 for all work.**
- (ii) the Tenderer will execute whatever additional or extra work may be required by the Board of Management of the Toronto Zoo pursuant to article 30 of the General Conditions in strict conformity in all respects with the requirements of the Contract;
- (iii) deletions from the Work other than those referred to in clauses (ii) and (iii) of paragraph 7 of this Tender Form may be made at the discretion of the Chief Operating Officer for a price or for prices to be determined;
- (iv) where possible, all materials necessary for the purposes of the Work shall be of Canadian origin and manufacture if available when required;
- (v) the Tenderer shall forthwith arrange for an approved surety for the proper fulfilment of the Contract as required under the terms of article 29 of the General Conditions (“Surety and Bond”), and will execute the Contract, Performance Bond, Payment Bond and Statutory Declaration of Paid Tax and Assessments, (verifying payment of all Workers’ Compensation and Corporations Tax levies) in quadruplicate, in a form satisfactory to the solicitor for the Board of Management of the Toronto Zoo, within seven (7) days after being notified so to do by, or by anyone acting on behalf of, the said solicitor.

9.0 The offer set out in this Tender Form shall continue open to acceptance and irrevocable for a period of Ninety (90) Days following the deadline for the submission of Tenders, and if the said offer is accepted within such period, or accepted subject to such approval as is required by law from the Ontario Municipal Board, such offer shall remain open and irrevocable until the Contract documents are executed by the Tenderer and the Performance and Payment Bonds hereinbefore mentioned, executed by an approved surety, are provided to the Board of Management of the Toronto Zoo, but if approval by the said Board aforesaid is required and is refused with finality (i.e., once any appeal process has become inexecutable, exhausted or irrevocably abandoned), such offer shall be deemed then to have expired and to be incapable of acceptance.



- 9.1 The Board of Management of the Toronto Zoo may at any time within the Ninety-Day (90) period referred to in subparagraph (1) hereof, without notice accept the offer set out in this Tender Form whether any other Tender has previously been accepted or not.
- 9.2 The awarding by the said Board of Management of the Toronto Zoo of a Contract based on the offer set out in this Tender Form, shall constitute and be an acceptance thereof without communication with or any notice thereof to the Tenderer.
- 9.3 Should the Tenderer for any reason default or fail in respect to any matter or thing hereinbefore contained, the Tenderer will pay to the Board of Management of the Toronto Zoo any sum or sums which the Board of Management of the Toronto Zoo may expend or for which it may become liable by reason of such default or failure including the cost of any advertisement for new Tenders in excess of the bid security provided for in paragraph 7 of this Tender Form.

IN WITNESS WHEREOF the Tenderer has executed this Tender Form under

this day of \_\_\_\_\_, 2018

SIGNED, SEALED AND DELIVERED )

in the presence of: )

)

)

)

)

**NOTE:**

- (A) If this Tender Form is submitted by or on behalf of behalf of any corporation as a Tenderer, it must be signed in the name of such corporation by its duly authorized signing officer(s), or agent(s), who shall also subscribe his (their) own name(s) and office(s). The corporate seal must also be affixed, but no other person need sign as witness.
- (B) Any individual who signs as a Tenderer must affix a red adhesive seal to the right of his signature, in the presence of an adult witness, who should also sign to the left of the column of brackets in the space provided. The Tenderer's name should be typed or printed below his signature.
- (C) If the Tenderer is a Partnership, this Tender Form may be signed by any partner(s) on behalf of the partnership in accordance with (A) or (B) above, as is applicable.

**FORM 1**  
**Appendix I****LIST OF SUBCONTRACTORS** (Due with Tender on stipulated closing date)

The tenderer proposes to sublet the following portions of the Work to the persons firms or corporations indicated (the Contractor is responsible for all pricing with all subcontractors).

The Tenderer submits that in proposing the under mentioned subcontractors, the tenderer has consulted each and have ascertained to our completed satisfaction that those names are fully acquainted with the extent and nature of the work and that they will execute their work with the requirements of the contract documents.

<b>TRADE</b>	<b>NAME/ADDRESS</b>	<b>TELEPHONE</b>	<b>LICENCE #S</b>
<b>OTHER (LIST)**</b>			

\* Insert "Own Forces" for every portion of the Work which Tenderer will be performing without a subcontractor. See Note following clause 39 of the General Conditions regarding non-union sub-contractors.

\*\* Tenderer must specify nature of work for each "Other" sub-contract.

**FORM 1**  
**APPENDIX II**
**UNIT PRICES** (Due 24 hours after stipulated closing date)

All prices are to include the supply and installation of all labour, material, charges, taxes (excluding Harmonized Sales Tax), payroll, burden and profit.

<b>ITEM</b>	<b>UNIT</b>	<b>ADD</b>	<b>DEDUCT</b>
Unit price to add to or delete from contract for repair of wet and/or deteriorated existing B.U.R. membrane as specified:	Sq. ft.		
Unit price to add to or delete from contract for replacement of wet and/or deteriorated existing fiberglass insulation with 38 mm (1.5") of new polyisocyanurate insulation:	Sq. ft.		
Unit price to add to or delete from contract for replacement of wet and/or deteriorated existing with 13mm (0.5") of new fireboard:	Sq. ft.		
Unit price to add to or delete from contract to repair of wet and/or deteriorated existing vapour retarder as specified:	Sq. ft.		
Unit price to add to contract to supply and install new rust inhibiting primer and two coats of paint to prepared metal deck surfaces:	Sq. ft.		
Unit price to add to contract to supply and install new metal decking to match existing:	Sq. ft.		
Unit price to add to contract to supply and install new wood plank decking to match existing in size:	Sq. ft.		
Unit price to add to contract to supply and install new plywood sheathing to replace and match identified damaged existing plywood:	Sq. ft.		
Unit price to add to contract to supply and install new wood blocking to replace and match identified damaged existing wood:	Bd ft.		

**FORM 1**  
**TAPPENDIX III****ITEMIZED PRICES** (Due 24 hours after stipulated closing date)**(included** in Bulk Tender Price)

All prices are to include the supply and installation of all labour, material, taxes (excluding Harmonized Sales Tax), charges, payroll, burden, and profit, and would be deducted from the stipulated price should the specified work be excluded from the contract work.

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PRICE</b>
1.		
2.		\$
3.		\$
4.		\$
		<hr/> <hr/>
	Total Bulk Tender Price (Insert in Section II Forms, Form 1 Tender Form Item 5.0(i))	\$

**FORM 1**  
**APPENDIX IV****ADDITIONAL PRICES** (Due 24 hours after stipulated closing date)

(**not included** in Bulk Tender Price)

All prices are to include the supply and installation of all labour, material, taxes (excluding Harmonized Sales Tax), charges, payroll, burden and profit.

**ITEM    DESCRIPTION****PRICE**

---

\$ \_\_\_\_\_  
Credit / Extra

\* For each item, insert amount in the appropriate column to indicate whether the price change will result in an increase in, or a reduction of, the Bulk Tender Price.

**FORM 1**  
**APPENDIX V****ALTERNATIVE PRICES** (Due 24 hours after stipulated closing date)

(**not included** in Bulk Tender Price)

All prices are to include the supply and installation of all labour, material, taxes (excluding Harmonized Sales Tax), charges, payroll, burden and profit.

---

<b>Item</b>	<b>Description</b>	<b>Add or Deduct From Base Bid Price</b>
-------------	--------------------	--

---

1.

\* For each item, insert amount in the appropriate column to indicate whether the price change will result in an increase in, or a reduction of, the Bulk Tender Price.

**FORM 1****APPENDIX VI \***

**UNSOLICITED ALTERNATIVES** (Due 24 hours after stipulated closing date IF APPLICABLE)  
(prices not used for Bulk Tender Price)

All alternatives must conform to the requirements of Section 01 25 00 – Product Substitution Procedures.

All prices are to include the supply and installation of all labour, material, taxes (including Harmonized Sales Tax), charges, payroll, burden and profit.

---

<b>Number of Item</b>	<b>Description of Item</b>	<b>Change in Bulk Tender Substituted in Work</b>	
		Increase	Reduction

---

- \* This Appendix is optional, but if it is used, the requisite details must be set out or attached: see paragraph 22 of the Instructions to Tenderers. If this Appendix is not used, clause (vi) of paragraph 7 of the Tender form should be STRUCK OUT and this sheet either omitted or marked “Not Applicable”.



**FORM 1**  
**APPENDIX VII****TENDERER'S RESOURCES/METHODOLOGY FOR THE WORK, PROPOSED ORGANIZATION FOR THE WORK AND PERSONNEL EXPERIENCE**

---

1. Approximate Annual Value of construction Work in Canada - provide copy of completed CDC11-1996: (R2006) Contractor's Qualification Statement.

2014	\$	2015	\$
2016	\$	2017	\$

2. Bank Reference – provide Financial Institution letter outlining credit history and financial capacity for this value and size of project:

3. Similar redevelopment projects the Tenderer has completed in Canada in the past four years (include references and values for at least 3 projects):

Project Name/ Location	Project Amt (\$)	Reference Contact & Phone No.
---------------------------	---------------------	----------------------------------

4. Brief description of all lawsuits with which the Tenderer is involved (indicate if Tenderer is suing or being sued):



**FORM 2**

**STATUTORY DECLARATION OF TENDERER**

CANADA ) IN THE MATTER of a Tender by\*  
 PROVINCE OF ONTARIO )  
 JUDICIAL DISTRICT OF YORK ) for  
 )  
 ) MEMBER & GUEST SERVICES BUILDING  
 ) ROOF REPLACEMENT  
 TO WIT: ) RFT #22 (2018-07)  
 )  
 )  
 \*\*I/We \_\_\_\_\_ the \_\_\_\_\_

\_\_\_\_\_ in the \_\_\_\_\_ of \_\_\_\_\_

DO SOLEMNLY DECLARE as follows:

If Tenderer is a corporation, complete 1A and strike out 1B and 1C.

If Tenderer is an individual carrying on business under firm name, complete 1B and strike out 1A and 1C.

If Tenderer is a partnership, complete 1C and strike out 1A and 1B

) 1A. I am (state "President", "Secretary", or  
 ) as the case may be)  
 )  
 ) of the Tenderer above referred to.  
 )

) 1B. I am the Tenderer above referred to,  
 ) and there is no other person  
 ) associated with me in partnership.  
 )

) 1C. We are the Tenderers herein carrying on  
 ) business in Partnership, under the name of  
 ) \_\_\_\_\_

) and we are the only members of such  
 ) partnership.  
 )  
 )

**RFT # 22 (2018-07) MEMBER & GUEST SERVICES BUILDING ROOF REPLACEMENT  
SECTION II - FORMS**

\*\*I/We have carefully read through the attached Tender Form and to the best of my/our\*\* information, knowledge and belief the several matters stated in the said Form are in all respects correct and true.

- 
- \* Insert Tenderer's name
  - \*\* Delete inapplicable word

3. \*I AM/WE ARE, each of the full age of eighteen years or over.

\*AND I/WE make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

\*(SEVERALLY) DECLARED before me )  
)  
at the of )  
in the )  
)  
this day of , 2018. )  
)  
)

A Commissioner, etc.

**NOTE:**

This Declaration must be sworn before a Notary Public or other Commissioner for Oaths.

---

\* Delete inapplicable word

**FORM 3****BID BOND**

---

Bond No. \_\_\_\_\_

Amount: 10% of net contract amount

KNOW ALL MEN BY THESE PRESENTS, that

as Principal, hereinafter called "the Principal", and

as Surety, hereinafter called the Surety, are held and firmly bound unto the Board of Management of the Toronto Zoo as Obligees, each in the amount of

Dollars (\$ \_\_\_\_\_) lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal submitted a written Tender (hereinafter called "the Tender") to the Obligees dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_ at \_\_\_\_\_ in the \_\_\_\_\_ in the City of Toronto (hereinafter called "the Work"),

NOW THEREFORE THE CONDITION OF THIS OBLIGATION is such that if, on acceptance of the Tender in accordance with the terms and conditions of the Tender within 90 days from the closing date of the call for Tenders, the Principal shall, within the time required, enter into a formal contract and give good and sufficient bonds to secure the performance of the Work under the terms and conditions of the contract and the payment of its obligations thereunder for all labour, materials and services used or reasonably required for use in the performance of same, then this obligation shall be null and void; otherwise the Principal and Surety will pay unto the Obligees the difference in money between the amount of the price set out in the Tender and the amount for which the Obligees legally contracts with another party to perform the Work if the latter amount be in excess of the former.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond. Any suit under this Bond must be instituted before the expiration of six months from the date of this Bond.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as principal and that nothing of any kind or matter whatsoever that will not discharge the Principal, shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of sureties to the contrary notwithstanding.

IN TESTIMONY WHEREOF, the Principal has duly executed these presents under seal, and the Surety has caused these presents to be seated with its corporate seal duly attested by the signatures of its duly authorized officers, this \_\_\_\_ day of \_\_\_\_\_, A.D. 2018.

SIGNED, SEALED AND DELIVERED  
in the presence of:

) \*  
)  
)  
)  
)  
) \_\_\_\_\_  
)  
)  
)  
) \_\_\_\_\_  
) \*\*  
)  
)  
)  
) \_\_\_\_\_  
)  
)  
)  
)  
) \_\_\_\_\_

**NOTE:**

The NOTE on the signing page of the Tender Form applies equally to execution of this Bond.

\_\_\_\_\_

\* Type or print name of Principal here  
\*\* Type name of Surety here

**FORM 4****AGREEMENT TO BOND**

(to be attached to and to form part of Bid Bond)

\_\_\_\_\_

We, the undersigned, the Surety on the attached Bid Bond hereby undertake and agree with the Board of Management of the Toronto Zoo as Obligee if our Principal's Tender is accepted by you to become bound as Surety for our Principal

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
(Name of Tenderer)

of \_\_\_\_\_

(Place)

the Tenderer to you by Tender Form dated \_\_\_\_\_

for \_\_\_\_\_

(hereinafter \_\_\_\_\_

(Description of work)  
(called "the Work")

in an amount equal to Fifty Per Cent (50%) of the Contract Price for the due and proper performance of the Work as shown and described in the Contract between the Obligee and our Principal for the Work, including a period of maintenance of one (1) year after the final completion of the Work and, in addition, in an equal amount for the due and proper payment of those having direct contracts with our Principal for labour, material and/or services for the Contract Work, removal of registered lien claims and certificates of action from the title to the lands on which the Work is performed and full reimbursement of the Obligee for all liability and payments to such persons in connection with the Contract, such performance and payment bonds both to be in the forms indicated by the Obligee in the Tender documents.

It is a condition that this Agreement shall become null and void if the bonds mentioned above are not required from our Principal within ninety (90) days of the award of the Contract to our Principal.

In witness whereof we have hereunto affixed our Corporate Seal, testified by the hand(s) of the proper officer in that behalf.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2018.

(name of Surety)

(Address of Local Office)



**FORM 5**

**PERFORMANCE BOND**

Bond No. \_\_\_\_\_

Amount\$ \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we

hereinafter called “the Principal”

- and -

hereinafter called “the Surety”

are jointly and severally held and firmly bound unto the Board of Management of the Toronto Zoo, hereinafter called the “Obligee”, its successors and assigns, each in the sum of **WRITE IN WORDS**

Dollars (\$\_\_\_\_\_ ) of lawful money of Canada, to be paid unto the Obligee for which payment well and truly to be made, we the Principal and Surety jointly and severally bind ourselves, and our and each of our respective heirs, executors, administrators, successors and assigns by these presents.

SIGNED AND SEALED with our respective seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 2018.

WHEREAS by an agreement in writing bearing even date herewith the Principal has entered into a contract with the Obligee, hereinafter called “the Contract”, for MEMBER & GUEST SERVICES BUILDING ROOF REPLACEMENT, RFT #22 (2018-04) (hereinafter called “the Work”) as more particularly set out therein, which Contract is by reference herein made a part hereof as fully to all intents and purposes as though recited in full herein,

NOW THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal shall at all times duly perform and observe the Contract or as the same be changed, altered or varied as hereinafter provided, to the satisfaction of the Obligee, and shall at all times fully indemnify and keep indemnified the Obligee from and against all and any manner of loss, damage, expense, suits, actions, claims, liens, proceedings, demands, awards, payments and liabilities arising out of or in any manner based upon or attributable to the Contract, and shall fully reimburse and repay the Obligee for all outlay, expense, liabilities, or payments incurred or undertaken to be made by the Obligee pursuant to the Contract, then this obligation shall be void, but otherwise it shall be and remain in full force and effect.

Provided further and it is hereby agreed and declared that there shall be no liability under this instrument of the Principal and Surety for payment of any claims for labour, material or services used or reasonably required for use in the performance of the Contract.

Provided always, and it is hereby agreed and declared, that the Obligee and the Principal have the right to change, alter and vary the terms of the Contract and that the Obligee may in its discretion at any time or times take and receive from the Principal any security whatsoever and grant any extension of time thereon or on any liability of the Principal to the Obligee.

Provided further and it is hereby agreed and declared that the Principal and the Surety shall not be discharged or released from liability hereunder and that such liability shall not be in any way affected by any such changes, alterations, or variations, taking or receiving of security, or extension of time, as aforesaid, or by the exercise by the Obligee of any of the rights or powers reserved to it under the Contract or by its forbearance to exercise any such rights or powers, including (but without restricting the generality of the foregoing) any changes in the extent or nature of the Work or by any dealing, transaction, forbearance or forgiveness which may take place between the Principal and the Obligee.

And it is hereby declared and agreed that the Surety shall be liable as Principal, and that nothing of any kind or matter whatever that will not discharge the Principal shall operate as a discharge or release of liability to the Surety, any law or usage relating to the liability of sureties to the contrary notwithstanding.

Provided further and it is hereby agreed and declared that the Surety shall not be liable for a greater sum than that specified in this bond.

IN WITNESS WHEREOF the Principal and the Surety have executed these presents.

SIGNED, SEALED AND DELIVERED  
in the presence of:

)  
)  
)  
) \_\_\_\_\_  
)  
)  
)  
) \_\_\_\_\_  
) Principal  
)  
)  
) \_\_\_\_\_  
) Surety

**FORM 6**

**LABOUR & MATERIAL PAYMENT BOND**

Bond No: \_\_\_\_\_

Amount \$ \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we

hereinafter called “the Principal”

- and -

hereinafter called “the Surety”

are jointly and severally held and firmly bound unto the Board of Management of the Toronto Zoo and its successors, hereinafter called “the Oblige” as Trustee, each in the sum of **WRITE IN WORDS**

Dollars (\$ \_\_\_\_\_) of lawful money of Canada, to be paid unto the Oblige, for which payment well and truly to be made we the Principal and Surety jointly and severally bind ourselves, our and each of our respective heirs, executors, administrators, successors and assigns by these presents.

AND WHEREAS by an agreement in writing bearing even date herewith, the Principal has entered into a contract with the Oblige, hereinafter called “the Contract”, for

as more particularly set out therein, which Contract is by reference herein made a part hereof as fully to all intents and purposes as though recited in full herein.

NOW THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal shall:

- (a) at all times make payment to all claimants for all labour, materials or services used or reasonably required for use in the performance of the Contract, or as the same be changed, altered or varied as hereinafter provided, to the satisfaction of the Oblige;
- (b) at all times fully indemnify and keep indemnified the Oblige from and against all and any manner of loss, damage, expense, suits, actions, claims, liens, proceedings, demands, awards, payments, and liabilities arising out of or in any manner based upon or attributable to the claims of such persons;
- (c) promptly see to the removal from the registered title to the lands on which said construction takes place, of all claims for lien by claimants as aforesaid and all certificates of action in connection therewith; and
- (d) fully reimburse and repay the Oblige for all outlay, expense, liabilities, or payments, incurred or undertaken to be made by the Oblige attributable to the claims of such persons made pursuant to the Contract or the Construction Lien Act, 1983, then this obligation shall

be void, but otherwise it shall be and remain in full force and effect, subject, however, to the following conditions:

- (i) a Claimant for the purpose of this Bond shall be an individual, firm or corporation having a direct contract with the Principal for labour, services, material or any combination thereof used or reasonably required for use in the performance of the Contract;
- (ii) labour, material and services shall be construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment directly applicable to the Contract;
- (iii) an individual, firm or corporation who rents equipment to the Principal to be used in the performance of the Contract under a contract which provides that all or any part of the rent is to be applied towards the purchase price thereof, shall be a Claimant only to the extent of the prevailing industrial rental value of such equipment for the period during which the equipment was used in the performance of the Contract;
- (iv) the prevailing industrial value of equipment shall be determined, insofar as it is practicable to do so, in accordance with and in the manner provided for in the latest revised edition of the publication of the Canadian Construction Association titled "Rental Rates on Contractors Equipment" published prior to the period during which the equipment was used in the performance of the Contract;
- (v) the Obligee and the Principal shall have the right to change, alter and vary the terms of the Contract, and the Obligee may in its discretion at any time or times take and receive from the Principal any security whatsoever and any extension of time thereon or on any liability of the Principal to the Obligee;
- (vi) the Principal and the Surety shall not be discharged or released from liability hereunder and such liability shall not be in any way affected by any such changes, alterations, or variations, taking or receiving of security, or extension of time, as aforesaid, or by the exercise by the Obligee of any of the rights or powers reserved to it under the Contract or by its forbearance to exercise any such rights or powers, including (but without restricting the generality of the foregoing) any changes in the extent or nature of the works to be constructed, altered, repaired or maintained under the Contract, or by any dealing, transaction, forbearance or forgiveness which may take place between the Principal and the Obligee;
- (vii) every Claimant who has not been paid as provided for under the terms of the Claimant's contract with the Principal, before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labour was done or performed or materials were furnished by such Claimant may as a beneficiary of the trust herein provided for, sue on this Bond, prosecute the suit to final judgment for such sum or sums as may be justly due to such Claimant under the terms of his contract with the Principal and have execution thereon, and the Obliger shall not be obliged to do or take any act, action or proceeding against the

Surety on behalf of the Claimants, or any of them, to enforce the provisions of this Bond;

(viii) it shall be a condition of the trust provided for in this Bond, that if any act, action or proceeding is taken either in the name of the Obligee or by joining the Obligee as a party to such proceeding, then the Claimants, or any of them, who take such act, action or proceeding shall indemnify and save harmless the Obligee against all costs, charges and expenses or liabilities incurred thereon and any loss or damage resulting to the Obligee by reason thereof;

(ix) no suit or action shall be commenced hereunder by any Claimant:

(a) unless such Claimant shall have given written notice to each of the Principal, the Surety and the Obligee, stating with substantial accuracy the amount claimed,

(1) in respect of any claim for the amount or any portion thereof, required to be held back from the Claimant by the Principal, under either the terms of the Claimant's contract with the Principal or under the Construction Lien Act, R.S.O. 1990 c. C.30, whichever is the greater, within one hundred and twenty (120) days after such Claimant should have been paid in full under the Claimant's contract with the Principal,

(2) in respect of any claim other than for the holdback, or portion thereof, referred to above, within one hundred and twenty (120) days after the date upon which such Claimant did, or performed, the last of the work or labour or furnished the last of the materials for which such claim is made under the Claimant's contract with the Principal,

and such notice may be served

(3) by mailing the same by registered mail in each case to an address at which the intended recipient regularly maintains an office for the transaction of business, or

(4) in any manner in which legal process may be served in Ontario;

(b) after the expiration of one (1) year following the date on which the Principal ceased work on the Contract, including work performed under the guarantees provided in the Contract;

(c) other than in a Court of competent jurisdiction in the Province of Ontario to the jurisdiction of which Court the parties and Claimants shall submit,

but subject to the foregoing terms and conditions, the Claimants, or any of them, may use the name of the obligee to sue on and enforce the provisions of this Bond;

- (x) the amount of this Bond shall be reduced by, and to the extent of, any payments made in good faith, and in accordance with the provisions hereof, inclusive of the payment by the Surety of Construction Liens which may be filed of record against the subject matter of the Contract, whether or not claim for the amount of such lien be presented under and against this Bond.
  
- (xi) the Surety shall not be liable for a greater sum than the specified penalty of this Bond.

In Witness Whereof the Principal and the Surety have signed and sealed this Bond this \_\_\_\_\_ day of \_\_\_\_\_, 2018.

SIGNED, SEALED AND DELIVERED:

)  
)  
)  
) \_\_\_\_\_  
) Principal  
)  
)  
) \_\_\_\_\_  
) Surety

**FORM 7****SPECIMEN AGREEMENT**

---

THIS AGREEMENT made in triplicate this \_\_\_\_ day of \_\_\_\_\_, 20\_\_,

B E T W E E N:

BOARD OF MANAGEMENT OF THE TORONTO ZOO  
(hereinafter referred to as the "Board")

OF THE FIRST PART

- and -

CONTRACTOR'S NAME  
(hereinafter referred to as the "Contractor")

OF THE SECOND PART

WITNESSES THAT:

WHEREAS the Board of Management of the Toronto Zoo called for Tenders for the MEMBER & GUEST SERVICES BUILDING ROOF REPLACEMENT, RFT#22 (2018-07), (hereinafter referred to as "the Contract Work") and the Contractor submitted a Tender therefor contained in a Tender Form dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ (hereinafter called "the Tender Form"), a copy of which including all annexed Appendices, and the Statutory Declaration of Verification, together with a copy of the Instructions to Tenderers, (collectively hereinafter called "the Tender Documents") is attached to this Agreement, as Schedule "A"; and

WHEREAS the Board of Management of the Toronto Zoo on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, awarded to the Contractor a contract for the Contract Work at the price therefor marked "Accepted" in the Tender Form, and in accordance with all the terms and conditions of the Tender Documents and of the Specifications, the General Conditions and the Drawings (including any plans) referred to in the Specifications, which are (marked respectively as Schedules "B", "C" and "D" to this Agreement and hereinafter referred to respectively as "the Specifications", "the General Conditions" and "the Drawings",

IN CONSIDERATION OF the mutual covenants herein contained, the parties hereto hereby agree as follows:

- 1.0 The Contractor will execute and perform the whole of the Contract Work with all due expeditiousness and in a thoroughly workmanlike manner in all respects in strict accordance with all the terms and conditions of the Tender Documents, the Specifications, the General Conditions and the Drawings, and will maintain and guarantee the Contract Work as provided for in the Tender Documents, the Specifications and the General Conditions; all to the entire satisfaction of the Chief Operating Officer of the Board of Management of the Toronto Zoo (hereinafter called "the Chief Operating Officer"), and in

the execution and performance of the Contract Work the Contractor will carry out, perform, observe, fulfil and abide by all the covenants, agreements, stipulations, provisos and conditions mentioned and contained in the Tender Documents, the Specifications, the General Conditions and the Drawings, on the part of the Contractor to be carried out, performed, observed and fulfilled.

- 2.1 The Contractor will, from time to time and at all times hereafter well and save, defend and keep harmless and fully indemnify the Board and each of its officers, employees and agents of, from and against all manner of actions, suits, claims, executions and demands which may be brought against or made upon the Board, its officers, employees and agents, or any of them, and of, from and against all loss, costs, charges, damages, liens and expenses which may be sustained, incurred or paid by the Board, its officers, employees and agents, or any of them, by reason of, or on account of, or in consequence of the execution and performance of the Contract Work and/or the non-execution or imperfect execution thereof and/or the supply or non-supply of plant and material therefor, and will pay to the Board and to each such officer, employee or agent on demand any loss, costs, damages and expenses which may be sustained, incurred or paid by the Board or by any of its officers, employees and agents in consequence of any such action, suit, claim, lien, execution or demand and any monies paid or payable to the Board, or any of its officers, employees or agents in settlement or in discharge or on account thereof.
- 2.2 On default of payment by the Contractor of loss, costs, damages and expenses in accordance with subparagraph 2.1 hereof, any and all such monies so paid or payable may be deducted from any monies of the Contractor then remaining in the possession of the Board on account of the Contract Work or from monies payable by the Board to the Contractor on any account whatever or may be recovered from the Contractor or its Surety in any Court of competent jurisdiction as monies paid at their request.
- 2.3 The Contractor hereby authorizes and empowers the Board, or its Solicitor for the time being to defend, settle or compromise any of the actions, suits, claims, liens, executions or demands referred to in subparagraph 2.1 hereof as the Board or its said Solicitor may deem expedient, and hereby agrees to ratify and confirm all the acts of the Board or its Solicitor in that behalf, and to pay to such Solicitor on demand his reasonable costs of any such defence, settlement and/or compromise, in default of which payment the same may be deducted from any monies payable by the Board to the Contractor on any account whatever, provided that the Contractor at the expense of the Contractor may take charge of and conduct the defence in the name of the Board to any such action, suit, claim, lien, execution or demand.
- 3.0 If the Contractor duly and properly executes and performs the Contract Work and carries out, performs, observes, fulfils, keeps and abides by all the covenants, agreements, stipulations, provisos, terms and conditions contained herein and in the Tender Documents, the Specifications, the General Conditions and the Drawings, the Board will pay the Contractor for the Contract Work (exclusive of all extra or additional work ordered by the Chief Operating Officer in connection therewith) the price therefor marked "Accepted" in the Tender Form and for such extra or additional work at the unit rates or the amounts, as the case may be, stipulated in the written orders of the Chief Operating Officer authorizing the extra or additional work, such payments to be made in the manner and subject to the forfeitures and deductions set out in the Tender Documents, the Specifications and the



General Conditions upon estimates or certificates signed by the Chief Operating Officer and subject to the provisions of all applicable by-laws of the Board, PROVIDED THAT:

- (i) no money shall become due or payable under this Agreement unless and until an estimate or certificate therefor is signed as provided in this paragraph 3, the possession of which is hereby made a precedent to the right of the Contractor to be paid or to maintain any action for such money or for any part thereof;
- (ii) the Board shall not be liable or compelled:
  - (a) to pay for any extra or additional work, except only in the manner and as provided for in this Agreement and in the Tender Documents, the Specifications and the General Conditions;

OR

- (b) to grant or issue any estimate or certificate for any of the Contract Work rejected or condemned by the Chief Operating Officer or to pay any money therefor until the work so rejected or condemned has been replaced by the new material and workmanship to the written satisfaction of the said Chief Operating Officer; and
- (iii) the granting of any estimate or certificate or the payment of any monies thereunder shall not be construed as an acceptance by the Board of any bad or defective work or material to which the same relates, or as an admission of liability by the Board to pay any money in respect thereof, and shall not in any manner lessen the liability of the Contractor to replace such work or material, although the conditions of the same may not have been known to or discovered by the Chief Operating Officer at the time such estimate or certificate was granted or monies paid thereon.

4.0 The Tender Documents, the Specifications, the General Conditions and the Drawings shall be incorporated into and made part of this Agreement to the same extent, effect and fully as if each of them were set out and specifically repeated in this Agreement.

5.0 The Board shall have the right to deduct from any payments due to the Contractor under this or any contract, or to recover in any other way the Board may deem appropriate, all losses of entitlement, liquidated damages, and any other monies owed to the Board arising from the obligations under this Contract or any other contract between the Contractor and the Board.

6.0 All amounts payable to the Board under this Contract will bear simple interest at the rate of 1.25% per month (15% per year) (the "Default Rate of Interest"). Interest will be calculated and payable from and including the day after the day the amount is due until payment in full of the overdue amount is received by the Board. Interest will be calculated only on the principal amount outstanding from time to time, and interest charges will not be added to the outstanding principal amount for purposes of calculating interest. Payments received by the Board will be applied first to outstanding interest charges and the balance (if any) will be applied to the outstanding principal amount. The Default Rate of Interest may be increased by the Board from time to time by notice to the Contractor. The rights of the Board to charge and receive interest in accordance with this paragraph are without prejudice to any of the other rights of the Board in the Contract, at law or otherwise.

- 7.0 The Contractor will pay to the Board, immediately on demand, a charge of thirty-five dollars (\$35.00) for every cheque tendered by the Contractor to the Board that is not honoured by the institution on which it is drawn (the "Returned Cheque Fee"). The Returned Cheque Fee may be increased by the Board from time to time by notice to the Contractor, so that it is at all times equal to the charge payable in respect of cheques tendered in payment of tax, water and court service charges that are not honoured by the institution on which they are drawn.
- 8.0 This Agreement and everything herein contained shall ensure to the benefit of, and be binding upon, the parties hereto and their respective successors and permitted assigns.

IN WITNESS WHEREOF the Board and the Contractor have hereunto affixed their respective corporate seals attested to by the hands of their respective proper officers in that behalf duly authorized.

SIGNED, SEALED AND DELIVERED

)  
)BOARD OF MANAGEMENT OF THE  
)TORONTO ZOO  
)  
)\_\_\_\_\_  
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)  
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)  
)CONTRACTOR  
)  
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## 1. DEFINITIONS

1.1 The definitions given hereunder shall apply wherever used in these General Conditions, or in the Plans, Drawings, Profiles, Form of Tender, Information for Bidders, Specifications or Statutory Declarations forming part of the Contract,

- (i) **"Addenda" or "Addendum"** means a document containing additional information or changes to the Tender Call issued by the Toronto Zoo prior to the Closing Date;
- (ii) **"authorized", "directed", "required", "requested", "approved", "ordered", "sanctioned", and "satisfactory"**, unless some other meaning is obvious from the context, mean respectively authorized, directed, required, requested, approved, ordered, or sanctioned by or satisfactory to the Chief Operating Officer;
- (iii) **"Bid"** means the Form of Tender, Information for Bidders, General Conditions, or in the Plans, Drawings, Profiles, Specifications, all addenda or Statutory Declarations forming part of the Contract;
- (iv) **"Board Solicitor"** means the person for the time being filling the office of Solicitor for the Board, or the person then acting as such;
- (v) **"Bulk Tender Price", "Contract" and "Contract Documents"** have the meanings set out therefore in clauses (i) and (iii) of paragraph 2.0 of the Tender Form;
- (vi) **"Chief Operating Officer"** means the person for the time being filling the office of Chief Operating Officer of the Board or the person then acting as such;
- (vii) **"City" or words "the City"** means the City of Toronto;
- (viii) **"Consultant"** means the consultant for the Work;
- (ix) **"Contract"** means and includes the agreement to do the work entered into with the Board of Management of the Toronto Zoo, the Bonds or Security, the Specifications, these General Conditions, the Plans, Details and Profiles, the Drawings, the Tender and all other documents referred to or connected with the said agreement;
- (x) **"Contract Price"** means the price payable under the Contract to the Contractor, being the Bulk Tender Price eventually accepted by the Board of Management of the Toronto Zoo subject to any changes pursuant to the General Conditions;
- (xi) **"Contractor"**, or a pronoun in place thereof, means the person or persons or corporation who have undertaken to carry out the Contract;
- (xii) **"Council"** means the Council of the City of Toronto;
- (xiii) **"Drawings"** means the Drawings included as Section V of the Tender Package;
- (xiv) **the words "Fair Wage Officer"** means the person for the time being filling the position of Manager, Fair Wage and Labour Trades Office, (416)392-7300 of the City of Toronto, or the person then acting as such;

- (xv) **"General Conditions"** means the General Conditions included as Section III of the Tender package;
- (xvi) **"Inspection Costs"** shall mean the payroll costs of the Board's inspectors plus overhead, or in the case where a consulting engineer is employed, the charges rendered for his/her services to the Board.
- (xvii) **"Inspector"** means an inspector for the Board acting under the direction of the Chief Operating Officer;
- (xviii) **"Plans"** means all plans, profiles, drawings, sketches, or copies thereof exhibited, used or prepared for or in connection with the work embraced under the Contract;
- (xix) **"Plant"** means every temporary or accessory piece of equipment necessary or required to carry on or complete the work and extra work, in the time and manner herein provided;
- (xx) **"shall", "may", "herein", "person", "writing", "written", "surety", and "security" and words used in the singular number or the masculine' gender,** shall have the same meaning and effect as given in the Interpretation Act of Ontario;
- (xxi) **"Site"** means the site described in subparagraph 1.1 hereof at which the Work is to be performed as indicated in the Drawings and/or Specifications;
- (xxii) **"Specifications"** means the Specifications included as Section IV of the Tender Package;
- (xxiii) **"Specifications", "General Conditions", and "Agreement"** mean respectively the Specifications, these General Conditions and the Agreement forming part of the Contract;
- (xxiv) **"work" or "works"** (unless the context requires a different meaning) mean the whole of the works, materials, matters and things required to be done or supplied, mentioned or referred to in the Tender, Specifications, General Conditions, Agreement, Plans, Profiles and Drawings forming part of the Contract, including all extra or additional work or material, matters or things which may be ordered by the Chief Operating Officer, as herein provided.
- (xxv) Toronto Zoo "Owner" or the words "the Board" means the Board of Management of the Toronto Zoo.

## 2. TENDERS

2.1 The Information for Tenderers shall be deemed to contain the following provisions:

- (i) all Tenders for the execution of the work must be made on the printed forms supplied for that purpose, and no others will be received;
- (ii) each Tenderer is required to state in his/her tender
  - (a) his/her name and place of residence (or, in the case of an incorporated company, the corporate name, by whom incorporated and the location of the head office);
  - (b) if a Toronto area firm how long established in the Toronto area;

- (c) that the Tender is made without any knowledge, comparison of figures or arrangements with any other person making any bid for the same purpose, and that it is in all respects fair and without collusion or fraud;
  - (d) that no member of the Board or any officer of the Board of Management of the Toronto Zoo, is, shall be, or become interested, directly or indirectly, as contracting party, partner, stockholder, surety, or otherwise in, or in the performance of, the Contract, or in the supplies, work or business in connection with the Contract, or in any portion of the profits thereof, or in any of the monies to be derived therefrom;
- (iii) each Tender must be verified by the Statutory Declaration of the party or parties submitting it that the several matters stated therein are in all respects true;
  - (iv) each Tender shall be interpreted as covering the cost of the completion of the work in every respect, in accordance with the Contract, General Conditions, Specifications and Plans, including all labour, plant and tools.

### 3. CONTRACTOR'S UNDERSTANDING

3.1 It is understood and agreed that the Contractor has, by careful examination, satisfied himself/herself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under the Contract.

3.2 The Contractor shall:

- (i) carefully examine the location of the Work;
- (ii) make special enquiry of the commissions, companies or individuals owning, controlling or operating any utilities, pipes, conduits, tracks, and other structures that would affect or be affected by the Work, and inspect the public records of the Board and of any municipal departments having cognizance and control of such structures, to determine to his own satisfaction the character, size, position, and length thereof;
- (iii) make further personal inspection and investigation as he may deem proper, to determine the correctness of the information so obtained.

3.3. The Board of Management of the Toronto Zoo does not ensure the accuracy of information obtained pursuant to clause (ii) of sub-article 3.2 hereof, other than information about utilities, pipes, conduits, tracks, and other structures owned or operated by the Board, and any information in the Plans and Drawings or other material supplied by the Board prior to the Tender or as part of the Contract documents or otherwise, relating to non-Toronto utilities, pipes, conduits, tracks or other structures, shall be taken as an unverified supposition for which the Board assumes no responsibility and whose presence in that material shall not relieve the Contractor from compliance with sub-article 3.2 hereof.

3.3.1 For the limited purpose of determining any Change in the Work, the Board represents that the information furnished in the Contract Documents can be relied upon, but subject to the following limitations or exceptions:



- a) The Board only represents that the location of all underground utilities or other structures which will affect the Work will be shown in any drawing to a tolerance of:
  - i. 2 m horizontal and
  - ii. 1 m vertical
- b) The Board does not represent or warrant the accuracy of any interpretations of data or opinions expressed in any Subsurface Report available for the perusal of the Contractor; and
- c) The Board does not represent or warrant the accuracy of any information for which the Contract Documents specifically exclude any representation or warranty by the Owner.

3.3.2 Despite General Condition 3.3.1 the Board will not be responsible for the accuracy of any information contained in the Contract Documents and does not represent that such information can be relied upon in situations where the Board's Tender Call specifically requires the Contractor to make relevant inquiries and such inquiries would reasonably have provided accurate information to the Contractor.

- a) The representation contained in this General Condition 3.3.1 shall not relieve the Contractor from properly performing the Work with due diligence and undertaking the repair of damage to all utilities or subsurface structures. The Contractor shall take all reasonable action not to damage any utilities or other subsurface structure.

3.3.3 The Contractor shall arrange for stakeouts from the utility companies and/or Board in compliance with clause General Condition 35.8.

3.4 In the event that information obtained pursuant to clause (ii) of sub-article 3.2 hereof is inaccurate (other than as a result of misdirection, misunderstanding or erroneous transcription on the part of the Contractor or any person acting for the Contractor) so as to substantially increase the cost of performing the Work, the Contractor shall be entitled to an adjustment in the time of completion, the amount of which shall be as nearly as possible equivalent to the time delayed, and to make a claim as provided in article 31.

3.5 Maintain at job site, one copy of the following:

- a. Specifications and Drawings.
- b. Addenda.
- c. Change orders.
- d. Other modifications to Contract.
- e. Copy of approved work schedule.
- f. Field Observation and Test Reports.
- g. Construction Permit.

#### **4. DEFINITION OF CONTRACT**

4.1 Stated in general terms, and without in any way affecting or limiting the requirements and intent of the Specifications, Plans and Contract, the work required to be done, and/or equipment to be supplied by the Contractor under the Contract comprises all requisite excavations, the removal of all materials and obstructions in any way required for the proper carrying out of the works, the formation, construction, completion and maintenance of the several works referred to in the Plans and Specifications relating thereto, and in these General Conditions.

- 4.2 The several parts of the Plans, Specifications, these General Conditions, and the Contract shall be taken together to explain each other, and to make the whole consistent; and if it be found that anything has been omitted or mis-stated which is necessary for the proper performance and completion of any part of the work contemplated, the Contractor shall notify the Chief Operating Officer who shall take whatever measures are necessary to correct the omission or mis-statement.

## 5. PLANT, LABOUR AND MATERIAL

- 5.1 The Board of Management of the Toronto Zoo shall indicate the temporary and permanent easements provided by the City of Toronto or Toronto Zoo and the Contractor shall be responsible for the provision of all other areas required for the storage of plant, equipment and materials in connection with the work, and shall furnish all required skilled and unskilled labour, and materials, fuel, machinery, tools, and other plant, so that the contract, and all work required to be done under it, can and will be carried on in a workmanlike manner continuously and expeditiously to meet the completion date, in all respects to the satisfaction of the Chief Operating Officer.
- 5.2 All approved materials provided by the Contractor, in all cases, from the time at which they or any of them are brought upon the site, or upon the streets or lands of the City of Toronto, or the Toronto Zoo, or Area Municipality for the purpose of the Contract, and until the completion of the works, shall become and continue to be, under the control of the Board to the extent that the Contractor is prohibited from removing the same, or any part thereof, during the progress of the works, without the consent or instructions of the Chief Operating Officer in writing; but no advance of money will be made to the Contractor on materials delivered unless specifically provided for herein.
- 5.3 Before any steam boiler shall be used on the work, the Contractor must present to the Chief Operating Officer a certificate stating that the boiler has been inspected within one year by an authorized inspector of the Ontario Ministry of Consumer and Commercial Relations, and meets the requirements of that Ministry.
- 5.4 All materials necessary for the purpose of this Contract shall be of Canadian origin and manufacture, if available, when required and unless otherwise specified, all materials shall be new and both workmanship and materials shall be of good quality.
- 5.5 The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.
- 5.6 Approval of any material shall not subject the Board to pay for the same, nor prevent the rejection afterwards of any portion thereof which may turn out to be unsound or unfit to be used, in the judgment of the Chief Operating Officer, nor shall such approval be considered as any waiver of objection to the work of any subsequent period, on account of the unsoundness or imperfection of the materials used, or on any other account.
- 5.7 All equipment, including plant and machinery, used in constructing the work required by the Contract shall be subject to the approval of the Chief Operating Officer, but approval or failure to approve same shall not relieve the Contractor from responsibility for the proper performance of the Contract, or liability under same.
- 5.8 Where, in the opinion of the Chief Operating Officer, for public safety and convenience, conditions are not suitable for the use of trenching, excavating, or other special machinery, the Contractor

shall, upon the written order of the Chief Operating Officer, carry out the work without the use of such machinery, and no allowance will be made to the Contractor as a result of such restriction.

- 5.9 The Contractor shall be governed by the direction of the Chief Operating Officer in all matters concerning the storage of machinery, materials and supplies along the line or on the site of the work, and shall at his/her own cost and expense, shift or remove such machinery, material and supplies immediately upon notice to do so from the Chief Operating Officer.
- 5.10 If the Contractor neglects or refuses to so shift or remove any machinery, materials and supplies within ten (10) working hours after receipt of such notice, the Chief Operating Officer may shift or remove such machinery, materials or supplies and the cost of so doing shall be charged to and paid by the Contractor, or such cost may be deducted or collected by the Board as provided in article 47 hereof, entitled "Monies Due the Board of Management of the Toronto Zoo".

## 6. SAMPLES

- 6.1 Whenever required, the Contractor shall submit at his/her own cost, samples of materials and supplies for the approval of the Chief Operating Officer, and no material shall be used which is in any way inferior to the approved sample.

## 7. CONDEMNED AND SURPLUS MATERIALS

- 7.1 Should any plant, appliances, materials or workmanship which the Chief Operating Officer may deem to be inferior or unfit for use in or on the works, be brought on the ground, or used, the same shall be wholly removed therefrom within forty-eight (48) hours after notification to that effect from the Chief Operating Officer, and in case of failure or neglect on the part of the Contractor to remove the same, the Chief Operating Officer may cause the same to be taken away, at the Contractor's expense, and deposited, wasted, or otherwise disposed of, in any locality, place or way he considers convenient or proper, and the Contractor shall forthwith pay to the Board of Management of the Toronto Zoo, on demand, all expenses incurred, including storage, if any, or the same may be deducted or collected by the Board, as provided in article 48 hereof, entitled "Monies Due the Board of Management of the Toronto Zoo".
- 7.2 No surplus or other material of any kind arising from any portion of the work shall be sold, thrown away, dumped, wasted, or otherwise disposed of, without the written sanction of the Chief Operating Officer, and if so disposed of, the Chief Operating Officer shall ascertain as nearly as he conveniently can the quantities and value, and deduct the same as provided in article 48 entitled "Monies Due the Board of Management of the Toronto Zoo as they may be required, but if the Surplus excavated material not required by the Board shall be disposed of by the Contractor off the line of the works, in such a manner as not to cause a nuisance, injury or inconvenience to the Board or to the public or private parties; otherwise the Contractor will in all cases be held liable for and must indemnify the Board against all claims in respect thereof.

## 8. MATERIAL SUPPLIED BY THE BOARD

- 8.1 All materials shall be supplied by the Contractor with the exception of such material or equipment as is specifically stated to be supplied by the Board, and in all cases where materials are supplied by the Board, every effort will be made to have a sufficient supply of such material tested, examined and approved and ready for use at such times Board finds it impossible to furnish a sufficient supply at all times, the Contractor will not be entitled to any recompense for such delay,

other than an extension of the time of completion, the amount of which shall be determined by the Chief Operating Officer and which shall be as nearly as possible equivalent to the time delayed.

- 8.2 When the Contractor is required to make provision for and convey the materials as above from railway cars, he/she shall do so as soon as the cars are delivered to the Board, and any demurrage, on account of his/her inattention, will have to be borne by him/her.
- 8.3 Unless otherwise specified, all materials supplied by the Board shall be transported to the work by the Contractor from the point designated for their supply, at his/her own expense.
- 8.4 Once material has been supplied to the Contractor by the Board its storage prior to use is his/her responsibility, and any loss, theft, or damage occurring after the material is in the Contractor's custody shall be at his/her expense.

## 9. ERRORS BY CONTRACTOR

- 9.1 Changes, errors or mistakes made by the Contractor or his/her agents, workers or employees, either through carelessness or otherwise, and all settlements, failures, washouts and defects shall be rectified by the Contractor, at his/her own expense.

## 10. CONFLICTS AND OMISSIONS

- 10.1 The Contractor shall do all work and furnish all materials in accordance with the best practice and in the event of any inconsistency or conflict in the provisions of the Contract documents that cannot be resolved by application of the interpretative or background provisions of these General Conditions, the former provisions shall take precedence and govern in the following order:

1. Addenda
2. Supplementary Instructions to Tenderers
3. Instructions to Tenderers
4. Supplementary General Conditions
5. General Conditions
6. Standard Specifications
7. Drawings
8. Original tender document

- 10.2 In the case of any discrepancy between dimensions, figured dimensions shall take precedence over scaled dimensions and in the case of any discrepancy between Plans and Drawings or part thereof, the plan, drawing or part thereof with the largest scale shall govern.
- 10.3 Neither party to the Contract shall take advantage of any apparent error or omission in the plans or specifications, but the Chief Operating Officer shall be permitted to make such corrections and interpretations as may be necessary for the fulfillment of the intent of the Plans and Specifications.

## 11. DELAYS

- 11.1 Except as herein provided, the Contractor shall not be entitled to any compensation for delay that may be occasioned to his work except delays caused by the failure of the Board to provide any information or to do any act which the Contract expressly requires the Board to provide or do, but this exception shall not apply to the supply of materials or equipment by the Board.

## **12. ORAL ARRANGEMENTS**

- 12.1 In all cases of misunderstandings and disputes, oral arrangements will not be considered.
- 12.2 The Contractor shall produce written authority in support of his/her contentions, and shall advance no claim in the absence of such written authority, or use, or attempt to use, any conversation with any parties against the Board, or in prosecuting any claim against the Board.

## **13. CHIEF OPERATING OFFICER'S POWERS**

- 13.1 Should any discrepancies appear, or misunderstandings arise as to the meaning of the Contract or of these General Conditions, the Specifications or the Plans, or as to any omissions therefrom or mis-statements therein, in any respect, or as to the quality or dimensions thereof, or sufficiency of the materials, plant or work, or any part thereof, or as to the due and proper execution of the work, or as to the measurement or quantity or valuation of any works executed, or to be executed under the contract, or as to any other questions or matters, arising out of the Contract, the contractor, subject to the other provisions of these General Conditions, shall immediately when ordered by the Chief Operating Officer proceed with and execute the work or works or any part thereof forthwith, according to such decision and with such additions to or deductions from the Contract price as are provided under the terms of the Contract without making any claim in connection with such work except as herein provided.
- 13.2 The Chief Operating Officer or his representative shall have the right at all reasonable times to visit, enter and inspect any building, factory, workshop, work or site of the Contractor or others wherever any materials are being prepared, manufactured, or treated, or other work is being done in connection with the Contract, and the Chief Operating Officer or his representative shall have the right also to take such samples there from as may be necessary.

## **14. INSPECTION**

- 14.1 All work to be done under the Contract shall be done to the satisfaction of the Chief Operating Officer or his representative authorized to act for him, and the materials and process of preparation and manufacture shall at all times be subject to his and their examination and inspection and rejection in any stage of the preparation or manufacture.
- 14.2 The Contractor shall notify the Chief Operating Officer in writing, at least seven (7) days previous to the time and place when the manufacture is to commence or shop tests are to be performed, in order that a representative of the Chief Operating Officer may be present to witness the manufacture or shop tests.

## **15. CHIEF OPERATING OFFICER'S REPRESENTATIVE**

- 15.1 The Chief Operating Officer may designate, by notice in writing to the Contractor, an authorized representative to act in his place and stead with respect to the superintendence of the work, and any representative so designated shall have full power to approve the manner of performing the works in every particular, and the Contractor shall follow the instructions of the person so designated.

## **16. POWERS OF CHIEF OPERATING OFFICER'S REPRESENTATIVE**

- 16.1 The representative appointed by the Chief Operating Officer pursuant to article 15 shall see that the provisions of the Contract are faithfully fulfilled, especially regarding the quality of the workmanship and materials.
- 16.2 An authorized representative may stop the work entirely for any good and sufficient cause by giving written notice to the Contractor, and may issue written instructions as to the proper conduct of the work, which must be obeyed by the Contractor.
- 16.3 Orders given by an authorized representative of the Chief Operating Officer, relating to the quality of material and workmanship, must be obeyed by the Contractor immediately.
- 16.4 Any work done in the absence of an authorized representative of the Chief Operating Officer shall, on his request, be opened up for thorough examination, and must be rebuilt or replaced as directed, and at the Contractor's sole expense, but no approval by an authorized representative shall be taken as, or construed into, an acceptance of defective or improper work or material, which must, in every case, be removed and properly replaced whenever discovered at any stage in the Contract.

## **17. CONTRACTOR'S REPRESENTATIVE**

- 17.1 The Contractor must designate and have on the site at all times a competent and reliable representative in charge of the work, and such person shall be considered to be acting for the Contractor, and all notices, communications or instructions given or sent to or served upon such person shall be deemed to be given or sent to or served upon the Contractor.

## **18. DEFECTIVE WORK**

- 18.1 The Contractor shall, at any time, when so required by the Chief Operating Officer, during construction or during the period of guaranteed maintenance, make such openings, and to such extent, through any part of the works, as the Chief Operating Officer may direct, which he shall forthwith make good again to the satisfaction of the Chief Operating Officer, and should the work so opened up be found faulty in any respect, the whole of the expense incurred (including the cost of inspection) shall be defrayed by the Contractor, but if the work so opened up be found in accordance with the Plans and Specifications, the said expense shall be borne by the Board.
- 18.2 All defective work or materials discovered by the foregoing or any other means must be forthwith wholly removed, and made good by the Contractor to the satisfaction of the Chief Operating Officer, and the whole cost of such renewal, including the cost of materials, labour and inspection, shall be defrayed by the Contractor, but should the Contractor refuse to remedy such defects, then the Chief Operating Officer shall proceed with the work in any manner he may deem fit, or as provided in article 50 entitled "Forfeiture of Contract", the cost of such work to be paid by the Contractor, or collected by the Board as provided in article 48, entitled "Moneys Due the Board of Management of the Toronto Zoo".
- 18.3 In the event that a dispute occurs between the Contractor and the Board as to whether or not any portion of the work has not been performed in accordance with the Plans and Specifications or is in any way defective, the Contractor shall proceed with the work if ordered by the Chief Operating Officer and make a claim for such extra work as provided for in article 31.

## **19. PUBLIC CONVENIENCE AND SAFETY**

- 19.1 In carrying out the work, or any portion thereof, the convenience of the public must always be especially considered and provided for by the Contractor, who must not obstruct any street, thoroughfare or foot-walk, longer or to any greater extent than is absolutely necessary in the opinion of the Chief Operating Officer, and shall in no case tear up or open more of any street, roadway or place than permitted by the Contract.
- 19.2 The Contractor shall provide perfectly safe, ample and convenient means of approach and entrance to adjoining lanes, driveways, buildings and property, both for vehicles and foot passengers, wherever necessary, and for passing along all roadways and footwalks, and for crossing the same where it is practicable to do so, both during the prosecution of the works as well as at other times, and for this purpose must construct and maintain, in good and serviceable condition, suitable and convenient platforms, approaches, structures, bridges, crossings or other works.
- 19.3 Any trench that is part of the work, such as a sewer or watermain trench, and that is near any public conveyance stop for the taking on or discharging of passengers, must be protected so that passengers may safely alight.

## **20. CONDITION OF SITE AND DISPOSAL OF WASTE**

- 20.1 The Contractor during the progress of the work shall keep the site and work in as tidy a condition as practicable, shall not deposit any material on any portion of street, sidewalk, boulevard, grass plot, or other Board or public property, without permission of the Chief Operating Officer, and shall remove same without delay when and as directed by the Chief Operating Officer.
- 20.2 Upon completion of the work, the Contractor shall remove all false work, plant or surplus materials, as well as any rubbish accumulated on account of his/her operations, and shall leave the site in a condition satisfactory to the Chief Operating Officer.
- 20.3 Unless all surplus material, or plant, rubbish, false work, etc. is removed from time to time, when and as directed, the Chief Operating Officer will proceed to do whatever is necessary to restore the site, street, sidewalk, boulevard, grass plot, or other Board or public property, to a tidy condition, and charge the cost thereof against the Contractor.
- 20.4 Whenever and wherever any work is closed, suspended or stopped for the winter, all material of every description shall be gathered up by the Contractor from the streets, foot-walks, boulevards and grass plots, and removed therefrom.
- 20.5 Make good the work site and ensure that all waste materials, including such hazardous waste materials that may exist, are removed from the Toronto Zoo and disposed of in accordance with municipal, provincial and federal waste disposal regulations at an approved waste disposal facility in Ontario.

## **21. DRAINAGE**

- 21.1 The Contractor shall keep all portions of this work properly and efficiently drained during construction and until completion, and he/she shall be responsible for all damage which may be caused or result from water backing up or flowing over, through, from or along any part of the works, or which any of his/her operations may cause to flow elsewhere.

## 22. FIRE LOSS OR DAMAGE

22.1 The Board of Management of the Toronto Zoo shall not in any manner be answerable or accountable for any loss or damage by fire or otherwise that shall or may happen to the work or any part or parts thereof respectively or for any of the materials or other things used and employed in finishing and completing the work, or for any injury to any person or persons, including workers and the public, or for damage to adjoining property, against all of which injuries and damages to persons or property the Contractor shall properly guard, and make good all damage of whatsoever nature or origin which may arise out of, or be occasioned by any cause connected with the Contractor, or the work done by the Contractor, and shall indemnify and keep indemnified the Board against same until the completion of all the work hereunder, as to which completion, the final certificate of the Chief Operating Officer shall be the only evidence.

## 23. CONTRACTOR'S LIABILITY AND INDEMNITY

23.1 The Contractor shall assume the defence of and indemnify and save harmless the Board and its officers and agents from all claims relating to labour and materials furnished for the work, and to inventions, copyrights, trademarks, or patents, and rights, thereto, used in doing the work, and in subsequent use and operation of the work or any part thereof upon completion. In carrying out the works from their inception, and until the final acceptance of the same, the Contractor must be careful to cause as little injury or damage as possible to any adjacent property, public or private, or to any sidewalks, roadways, curbs, gutters, hydrants, manholes, frames, covers or things on or near the line, or in the vicinity of the works or elsewhere, and except as in the Contract is otherwise provided, if injury or damage is done, he/she must make good the same, at his/her own expense, in the manner directed by, and to the satisfaction of, the Chief Operating Officer.

23.2 The Contractor shall be responsible for any and all damages, or claims for damages for injuries or accidents done or caused by him or his employees, or resulting from the prosecution of the works, or any of his operations, or caused by reason of the existence or location or condition of the works, or of any materials, plant or machinery used thereon or therein, or which may happen by reason thereof, or arising from any failure, neglect or omission on his part, or on the part of any of his employees to do or perform any or all of the several acts or things required to be done by him or them under and by these General Conditions, and covenants and agrees to hold the Board, the City of Toronto and the Toronto & Region Conservation Authority Zoo harmless and indemnified for all such damages and claims for damage; and in case of the Contractor's failure, neglect or omission to observe and perform faithfully and strictly, all the provisions of these General Conditions, the Chief Operating Officer may, either with or without notice (except where in these General Conditions, notice is specially provided for, and then upon giving the notice therein provided for), take such steps, procure such material, plant, trucks and men, and do such work or things as he/she may deem advisable toward carrying out and enforcing the same, and any and all expenses so incurred may be deducted or collected by the Board, under the provisions of article 47, entitled "Monies Due the Board of Management of the Toronto Zoo", and any such action by the Chief Operating Officer as he is herein empowered to take, shall not in any way relieve the Contractor or his/her surety from any liability under the Contract.

23.3 Without limiting the generality of the foregoing provisions of this article 23 and notwithstanding any consent or order which the Chief Operating Officer may give to the Contractor to prosecute the works under this Contract for a longer period than eight hours a day or forty-eight hours a week, the Contractor may, by order of the Chief Operating Officer, be prohibited from carrying on operations during any hour or hours of the day in which the Chief Operating Officer in his sole judgment deems such operations to be a disturbance or nuisance to the residents of the Toronto



Area, or any other municipality or municipalities wherein the work is being executed in whole or in part, and irrespective of any permission or order which the Chief Operating Officer may have given to the Contractor, said Contractor shall indemnify, and save harmless the Board, the City of Toronto and the Toronto & Region Conservation Authority or other such municipality or municipalities as aforesaid, from any claim, action, loss or damage whatsoever which may be made, brought or recovered against it or them as a result of any of his operations.

- 23.4 In the event that the Contractor is enjoined by court process in connection with any of his/her operations, he shall not have recourse against the Board, the City of Toronto and the Toronto & Region Conservation Authority or any such other municipality or municipalities as aforesaid on account thereof.
- 23.5 The Contractor shall at all times pay, or cause to be paid, any assessment or compensation required to be paid pursuant to the Workplace Safety & Insurance Act, and upon failure so to do, the Board may pay such assessment or compensation to the Workplace Safety & Insurance Board, and deduct or collect such expenses under the provisions of article 48 entitled "Monies Due the Board of Management of the Toronto Zoo". The Contractor shall, at the time of entering into any contract with the Board, make a statutory declaration that all assessments or compensation payable to the Workplace Safety & Insurance Board have been paid, and the Board may, at any time during the performance or upon the completion of such contract, require a further declaration that such assessments or compensation have been paid.
- 23.6 The Contractor shall, at all times, be subject to and observe all rules and regulations which are or may, from time to time be imposed by law, as related to all branches of the work under Contract.
- 23.7 The Contractor shall, from time to time, adopt such approved construction or operating methods in carrying out the work as may be called for due to changing conditions which may be encountered during the progress thereof.

## 24. INSURANCE

- 24.1 The Contractor shall, at his/her own expense obtain and, until the work is fully complete maintain, broad-scope insurance coverages of the types provided for in sub-articles 24.3 to 24.5 hereof, satisfactory to the Chief Operating Officer as to form and substance, conforming in the case of sub-articles 24.3 and 24.4 with the indicated policy form of the Canadian Construction Documents Committee (CCDC), its equivalent or better subject to such modifications therein to cover unusual aspects of the work, working conditions or other circumstances as may be specified elsewhere in the Contract.
- 24.2 The Contractor shall, for each coverage, select the insurer, but shall at the request of the Chief Operating Officer, acting reasonably, replace any original or replacement coverage proposed or provided by the Contractor, with coverage through another insurer selected by the Contractor.
- 24.3 Liability Insurance (CCDC Form 101) on a wrap up basis shall be in the joint names of the Contractor and the "Board of Management of the Toronto Zoo", the architect, engineer, consultants and all sub-contractors in an amount not less than **TWO MILLION DOLLARS (\$2,000,000.00)** or such greater amount as is specified elsewhere in the Contract, less any deductible amount acceptable to the Chief Operating Officer, with the following provisions:

- (i) non-owned automobile liability coverage for the Board with respect to all licensed vehicles owned by the Contractor or engaged in any manner by the Contractor in carrying out the work;
  - (ii) availability of the proceeds to satisfy firstly any claim against the Board by third parties and then any claim by the Board against the Contractor;
  - (iii) naming the City of Toronto and the Toronto & Region Conservation Authority as additional insureds;
  - (iv) such insurance shall include Completed Operations coverage for a period of not less than twelve (12) months from the date of the Certificate of total Performance of the Work and shall be primary insurance before any other insurance available to the Board.
- 24.4 Builder's Risk Insurance (CCDC Form 201) and Boiler and Machinery Insurance (CCDC Form 301) on a wrap up basis covering the work shall be in the joint names of the Contractor and the "Board of Management of the Toronto Zoo" , the architect, engineer, consultants and all sub-contractors in an amount not less than the full value of the work from time to time less such items as are in the opinion of the Chief Operating Officer inappropriate, and less any deductible amount acceptable to the Chief Operating Officer, with loss payable, on behalf of all insured parties, to the Board, who shall deal with the proceeds as provided in sub-article 24.8 hereof.
- 24.5 Deleted, not required.
- 24.6 The Contractor shall on execution of the Contract provide to the Chief Operating Officer for permanent retention by him, an original or certified copy of each policy of insurance or Certificates of Insurance in a form acceptable to the Chief Operating Officer referred to in sub-articles 24.3, 24.4 and 24.5 hereof, and every required renewal or replacement thereof.
- 24.7 Any premium(s) due on the policies to be provided by the Contractor under this article 24 but not paid by the Contractor may be paid directly to the insurer(s) by the Board who shall be entitled to deduct same from any other monies due to the Contractor by the Board under this Contract or otherwise.
- 24.8 The Contractor shall see to repair or replacement of any part of the work damaged or destroyed prior to completion and acceptance of the work, in accordance with the terms and conditions of the Contract, subject to such extension of the time for completion of the work as the Chief Operating Officer may deem appropriate in the circumstances, and all monies received by the Board under the coverage referred to in sub-article 24.4 hereof shall then be paid to the Contractor in the required amounts, in accordance with the Chief Operating Officer's certificate(s) pursuant to article 43.
- 24.9 Deleted, not required.
- 24.10 The provisions of this article 24 shall in no way limit the requirements and obligations imposed on the Contractor elsewhere in the Contract, nor relieve the Contractor from compliance therewith and fulfillment thereof.

## **25. NIGHT, SATURDAY, SUNDAY AND HOLIDAY WORK**

- 25.1 Provided that the Contractor is advised in the Information for Tenderers that night, Saturday, Sunday or holiday work may be required in the Contract, the Chief Operating Officer may, where

he deems it necessary to speed up the work or deems it necessary or expedient in order to preserve and maintain in traffic over or on any street or road, or to restore utility service, order any work to be carried out in whole or in part at night or on a two or three shift basis, or on Saturday, Sundays or holidays, and the Contractor shall have no claim for extra compensation in respect thereof.

- 25.2 Except in the case of an emergency, no work shall be undertaken at night or on Saturday or Sundays without the consent in writing of the Chief Operating Officer.
- 25.3 The Contractor shall, as far as possible, refrain from work on days which are legal holidays in the Toronto area, and if he/she desires to work on any such holiday, he/she shall notify the Chief Operating Officer in writing at least four (4) days in advance of such holiday of his/her intention to work, stating the areas where the work will be conducted.
- 25.4 If the Contractor fails to give such notice in advance of any holiday, such failure shall be considered as an indication that no work requiring the presence of an authorized representative is to be done by the Contractor on such a holiday.

## **26. NOTICE TO CONTRACTOR**

- 26.1 Any notice or communication to the Contractor shall be deemed to be well and sufficiently given and served if handed to the Contractor or any of his/her clerks or agents, or if posted or sent to the address given in his/her Tender for the work, attached hereto, or to his/her domicile or usual place of business, or to the place where the work is to be or is being carried on, or if posted to or left at his last known address; and any papers so left, sent or addressed shall be considered to be, and to have been, legally served upon the Contractor.
- 26.2 In any written or printed notice to the Contractor in respect of general, special, or other repairs, or of any work of any nature required to be done under any of the provisions of the Contract, or of any other matter, it shall not be obligatory upon the Chief Operating Officer to specify minutely or in detail everything required, nor to specify by measurement the exact extent thereof, or the precise spot or spots where the work or material may be defective or faulty, or where any of the requirements of the Specifications have not been observed; but a reference in such notice to the clause or clauses bearing upon the matter, and a description of the locality in general terms, and sufficiently clear, in the opinion of the Chief Operating Officer, to indicate where the defect or trouble exists, shall be deemed to be, and shall be, ample notice.

## **27. NOTICE TO THE BOARD**

- 27.1 Any notice or communication to the Board shall be deemed to be well and sufficiently given and served if handed to the Chief Operating Officer or his authorized representative or forwarded by registered mail to the Chief Operating Officer at 361A Old Finch Ave., Scarborough, ON. M1B 5K7.

## **28. GUARANTEED MAINTENANCE**

- 28.1 The Contractor undertakes that after making proper allowances for ordinary wear and tear, for a period of twenty four (24) months from the date of completion of the work as shown on the Full Completion Payment Certificate referred to in article 43.8 or on the Final Payment Certificate referred to in article 43.10, whichever is applicable, the work shall be maintained at the sole expense of the Contractor in such condition as will meet with the approval of the Chief Operating Officer; and that he/she will, at his/her own cost, upon being required by the Chief Operating

Officer, make good in a permanent manner satisfactory to the Chief Operating Officer, any defects therein.

28.2 If the Contractor fails to comply with the directions of the Chief Operating Officer, the latter may, after giving the Contractor twenty-four (24) hours' written notice, perform the necessary work, and the whole cost, charge and expenses so incurred may be deducted or collected by the Board, as provided in article 48 entitled "Monies Due the Board of Management of the Toronto Zoo".

## 29. SURETY AND BONDS

29.1 The Contractor shall provide the Board of Management of the Toronto Zoo with:

- (i) a Performance Bond to secure the due and proper performance by the Contractor of his/her obligations under the Contract; and
- (ii) a Payment Bond to secure:
  - (a) the due and proper payment of those having direct Contracts with the Contractor for labour, material and/or services;
  - (b) removal of registered lien claims and certificates of action from the title of the lands on which the work or any part thereof is performed;
  - (c) full reimbursement of the Board for all liability and payments to those referred to in sub-clause (a) hereof in connection with the Contract,

each in favour of the Board, in an amount equal to 50% of the Contract Price and in a form satisfactory to the Board Solicitor, and in each of which the obligors are the Contractor and a Guarantee Surety Company authorized by law to carry on business in the Province of Ontario, having an office in the City of Toronto Area, unobjectionable to the Chief Operating Officer and not insolvent, bankrupt, in receivership or the subject of insolvency, bankruptcy, receivership or winding-up proceedings.

29.2 The Contractor may, in lieu of the said bonds, supply a cash deposit equal to the Contract Price, to the Board or other securities approved by him/her and in his/her opinion equivalent in net market value to that amount.

29.3 The expense of preparing the Contract shall to be paid by the Board but the expense of getting the Contract and Performance and Payment Bonds executed, if any, shall be borne by the Contractor.

## 30. COMMENCEMENT AND COMPLETION OF WORK

30.1 The work shall not be commenced, nor shall any material be procured, until the Contractor has signed the Contract, and obtained or received a written order, or orders, to commence the same, signed by the Chief Operating Officer; and it shall thereupon be commenced within seven (7) days and continuously carried on to completion, (subject as herein provided), and shall be completed and full possession thereof given the Board within the period provided herein, counting from the date of order to commence, an extension of time, in writing shall be allowed by the Chief Operating Officer, in which case it shall be carried on to completion, and possession given to the Board within the additional period so allowed.

30.2 THE WORK AND EVERY PART THEREOF SHALL BE COMPLETED BY THE CONTRACTOR WITHIN/BY FRIDAY, **2018-10-19** FOLLOWING RECEIPT OF NOTICE TO COMMENCE WORK FROM THE CHIEF OPERATING OFFICER.

Construction is expected to commence ASAP after PO is issued and is expected to be complete by **Friday, 2018-10-19**. The contractor is to provide a preliminary construction schedule with their tender submission.

30.3 In the event of delay caused by strikes or combinations on the part of the workers employed, or by any act of the Council of the Board or from such other cause as, in the opinion of the Chief Operating Officer, the Contractor cannot reasonably be held responsible for, or, in the event of extra or additional work being ordered by the Chief Operating Officer, the Chief Operating Officer may allow such additional time for completion as he may deem fair and reasonable, provided the Contractor applies in writing for an extension of time at the time such delay occurs, or such extra or additional work is ordered, and satisfies the Chief Operating Officer that he/she is justly entitled to a further time allowance.

30.4 Notwithstanding the time allowed for completion, should the rate of progress of construction be unsatisfactory, or should unnecessary interruption occur in the continuous prosecution of the works, in the opinion of the Chief Operating Officer, the full amount of inspection costs and the cost of other supervision shall, for such period of unsatisfactory progress, be deducted from any monies due the Contractor under the Contract.

30.5 No progress or interim estimate or certificate shall release the Contractor or his/her surety from any responsibility, or be taken as evidence of any such release, or as an acceptance of any work or material, or as a waiver of any condition of the Contract.

30.6 The whole work and every portion and detail thereof shall, during construction, be protected by the Contractor from damage from any cause whatsoever, and shall at time of such completion, be put and left by the Contractor in good and satisfactory condition, finished in all respects, and at that time, must be fully up to the requirements of the Contract in every particular.

At the time of completion of the work, the Contractor shall ensure that

- (i) all surplus and refuse material and rubbish are removed from the vicinity of the works in accordance with article 20.5;
- (ii) the premises are left in a neat and tidy condition;
- (iii) all damage to adjacent property, pavements, foot-walks, beaches, boulevards and sodding, or other things, injured or interfered with by the Contractor, his/her Sub-contractors or their workers, are made good; and
- (iv) every other requirement of the Contract has been complied with.

30.7 In case the Contractor fails to finish the work properly and fully, and as required, or in case the work, or any part thereof, is taken out of his/her hands, as provided in these General Conditions, the Chief Operating Officer may proceed to finish the work for him/her, as his agent in this respect, and at his/her expense, or proceed, as provided in article 50 entitled "Forfeiture of Contract".

30.8 The Contractor recognizes and agrees that the Zoo will suffer financial loss if Substantial Performance of the Contract is not attained within the time specified in this Contract. The Contractor also recognizes the delays, expenses and difficulties involved in proving the actual loss suffered by the Zoo if Substantial Performance of the Contract is not attained on time. Accordingly, instead of requiring any such proof, the Contractor agrees that as liquidated damages for delay (but not as penalty) the Contractor shall pay to the Zoo the sum of \$100 per day as liquidated damages for each and every calendar day's delay from the specified time for the attainment of Substantial Performance of the Contract until Substantial Performance of the Contract is attained, and it is further expressly acknowledged and agreed by the Contractor that:

- (i) this amount is a reasonable estimate of the actual damage that will be incurred by the Zoo due to any failure to attain Substantial Performance of the Contract within the time required by this Contract;
- (ii) the Zoo may deduct the amount due under this section from any monies that may be due or payable to the Contractor, whether under this Contract or any other agreement; and,

The liquidated damages provided for in this section shall be without prejudice to any other remedy to which the Zoo is entitled at law or in equity.

### **31. ALTERATIONS, EXTRAS, DEDUCTIONS AND CLAIMS**

31.1 The Chief Operating Officer shall have the right

- (i) to make or order any alterations or changes such as he may deem advisable at any time before or during the prosecution of work, in any line, grade, plan or detail thereof;
- (ii) to suspend or omit any portion of the work;
- (iii) to increase or decrease the dimensions of any part of the work;
- (iv) to vary the work in any other way;
- (v) to order any additional or extra work to be done or additional or extra materials to be furnished, and the Contractor shall in pursuance of written orders of the Chief Operating Officer, to that effect, proceed with, carry out and execute the works as directed, and shall supply such additional materials and do such additional or extra work in pursuance of such orders.

31.2 In each and every case where additional or extra work or material is ordered by the Chief Operating Officer to be done or supplied, the contractor shall, before commencing any such work or procuring any such material, obtain from the Chief Operating Officer, a written order therefore, stating that the same is an extra and will be paid for as such and also clearly defining the nature of such extra work or material, and the amount the Contractor is to receive therefore.

31.3 The amount which the Contractor is to receive pursuant to sub-article 31.2 hereof (hereinafter called "the Extra Price") shall be arrived at in each case as follows:

- (i) to the extent that Unit Prices provided for in the Contract are applicable to the additional or extra work or material (hereinafter collectively referred to as "Extras") the Extras Price shall be calculated from such Unit Prices without negotiation;
  - (ii) to the extent that Unit Prices as aforesaid are inapplicable to the Extras and the Chief Operating Officer is of the opinion that the nature or scope thereof is not indeterminate, the Extras Price shall be as is mutually agreeable to the Chief Operating Officer and the Contractor, and the following procedure shall govern establishment of the Extras Price:
    - (a) the Contractor shall provide the Chief Operating Officer with a written lump sum quotation (from the Contractor if the Extras are to be performed by the Contractor, otherwise from the Sub-contractor or Sub-sub-contractor by whom the Extras, excluding HST and any markup are to be performed) showing the amounts to be charged for labour, materials and services for the Extras. The Chief Operating Officer has the right to accept or reject the quotation submitted by the contractor or request that a revised quotation be submitted;
    - (b) the amount shown in Chief Operating Officer's written order for the extras shall be the agreed lump sum price. No further mark-up will be applied regardless of the extent to which the work is performed or sublet to others.
  - (iii) to the extent that no Unit Prices as aforesaid are applicable to the Extras, and the Chief Operating Officer is of the opinion that the nature or extent thereof is indeterminate, the Chief Operating Officer may require the Contractor by written order to perform the extra work on a Cost-Plus basis, and the Contractor shall so perform such work for an Extras Price calculated in accordance with the provisions in that behalf set out at the end of this article 31.
- 31.4 Where the Contractor contemplates doing or supplying any work or material which is not ordered to be done by the Chief Operating Officer and which he/she considers to be extra or beyond the requirements of the Contract and upon which he/she intends claiming any extra or additional payment, he/she shall notify the Chief Operating Officer in writing of his/her intention to commence work thereon or delivery thereof so that a proper account or record of the same may be kept by the Chief Operating Officer, and the Contractor shall have no claim for any work done or material supplied prior to such notification.
- 31.5 Nothing herein contained is to preclude the Board or Chief Operating Officer from having any extra or additional or other work done by the Board workers or other parties, in the event of satisfactory arrangements therefor not having been concluded between the Chief Operating Officer and the Contractor, or for any other sufficient reason, in the opinion of the Chief Operating Officer.
- 31.6 If any work, labour or material which the Contractor was required to perform or supply under the Contract is directed by the Chief Operating Officer to be changed or omitted, whereby a lesser quantity of work, labour or material is performed or supplied, then the Chief Operating Officer may deduct from the Contract price the value of any work, labour or material not required to be performed or supplied, ascertained in accordance with the schedule set out in the Tender for the work and/or as determined by the Chief Operating Officer.
- 31.7 All claims of every nature, which the Contractor may have in respect of this Contract or work done thereunder, are to be summarized and submitted by him (in duplicate) to the Chief Operating Officer, together with his/her full account for the work, at the time of completion, and he/she shall make no claim of any nature afterwards; and no claim not then made, or allowed by the Chief

Operating Officer, shall be sustainable, and no action or suit shall be commenced by either party to the Contract until after the Substantial Performance Payment Certificate referred to in article 43.6 has been signed by the Chief Operating Officer, provided that the signing of such Certificate shall not be withheld except for reasonable cause.

31.8 If the Contractor neglects or fails to observe fully and faithfully sub-articles 31.1 to 31.7 hereof, he shall forfeit all right to payment for any work covered thereunder, which he/she otherwise might have had, and shall not make any claim in respect thereof; and if made, the Board Zoo may reject the same as invalid, and he /she shall not have any right of recovery in respect thereof, at law or otherwise, unless he/she shall have obtained the consent of the Chief Operating Officer in writing to his/her making such claim.

31.9 Any extra work ordered by the Chief Operating Officer to be done through change order process. An approved change order and Purchase Order are to be issued to the contractor prior to starting any work associated with the extra. Cost-plus basis shall be undertaken by the Contractor, upon receipt of a written order so to do, who shall be paid in accordance with the following provisions:

- (i) Cost of Labour - shall include the amount of wages, salary and payroll burden paid or incurred directly by the Contractor to or in respect of labour and supervision by foremen actively and necessarily engaged on cost-plus work based on the recorded time and hourly rates of pay for such labour and supervision, but shall not include any payment or costs incurred for general supervision, administration or management times spent on cost-plus work or any wages, salary or payroll burden for which the Contractor is compensated by any payment made by the Board for equipment.
- (ii) Payroll Burden - shall be the payments in respect to Workplace Safety & Insurance, vacation pay, employment Insurance, liability insurance, sickness and accident insurance, pension fund and such similar payments as the Chief Operating Officer may approve;
- (iii) Cost of Material - shall be the cost of material purchased by the Contractor for the cost-plus work as shown by itemized invoices valued at current prices;
- (iv) Contract Governs - cost-plus work performed by the Contractor under this sub-article 31.9 shall be subject to all the terms, conditions, specifications and provisions of the Contract;
- (v) Daily Records - daily work records, as reported in the Inspector's Daily Report Form and prepared by the Chief Operating Officer or his authorized representative, reporting the labour and equipment employed and material used on each cost-plus project, shall be reconciled with and signed by the Contractor's representative each day;
- (vi) Terms of Payment Labour and Supervision - the Board shall pay the Contractor for labour and supervision employed on cost-plus work at the rate of 115% of cost of labour for the first \$1,000.00 of work and 115% on the remainder;
- (vii) Terms of Payment Material - the Board shall pay the Contractor for new material used in cost-plus work at the rate of 110% of the cost of material, but material originally supplied and subsequently salvaged by the Contractor in re-usable condition shall be accepted by the Contractor and 50% of the cost of salvaged new material shall be payable to the Contractor;
- (viii) Terms of Payment Sub-Contractors - where labour, services or other work is performed in respect of the cost-plus work for or in behalf of the Contractor by others, payment shall be



based on the actual cost invoiced, excluding HST and markup, to the Contractor plus 5% thereof where the work is performed by a Sub-contractor named in the Contract, and plus 10% if the Sub-contractor is not named in the contract;

- (ix) Terms of Payment Equipment - any period of time during which equipment is actively engaged in performing cost-plus work or being moved to the work site under its own power shall be considered working time for which the Board shall pay the Contractor the current Board rate as determined by the Chief Operating Officer;
- (x) Terms of Payment Equipment Standby Time - a period of time, or part thereof, which is not herein considered working time, and during which the equipment is required to remain on the site of the cost-plus work shall be considered standby time and the Board shall pay for that portion of standby time, which together with the working time does not exceed 10 hours in any one working day, at the rate of one-third of the City of Toronto rate;
- (xi) Terms of Payment Personnel Standby Time - the wages, salary and payroll burden of the operator or operating crew who cannot be otherwise employed during standby time shall be included in the cost of labour;
- (xii) Terms of Payment Float Time - when equipment is being transported by float within the limits of the Contract, to or from the site of the cost-plus work, payment shall be made by the Board only in respect of the float, but the Chief Operating Officer shall negotiate payment for transporting equipment from sources outside the limits of the Contract;
- (xiii) Terms of Payment Rented Equipment - only equipment which is rented for the purpose of carrying out the cost-plus work shall be considered to be rented equipment and payment therefor shall be based on the actual cost to the Contractor plus 10% thereof provided that the rate and conditions of rental are reasonable, but notwithstanding any other provision of this sub-article 31.9 no payment shall be made to the Contractor for or in respect of hand tools or equipment which are tools of the trade;
- (xiv) Contractor to Submit Invoice - the Contractor shall submit to the Board a separate invoice in triplicate for each cost-plus work project within thirty (30) days of the completion of the project, setting out the order number, dates of the work, and separate itemizations of labour, material, and equipment and having attached thereto receipted invoices for materials, rented equipment, and other charges incurred by the Contractor on the cost-plus work;
- (xv) Only Basis of Payment of Cost-Plus Work - except where there is agreement in writing from the Chief Operating Officer, the compensation as provided in this sub-article 31.9 shall be accepted by the Contractor as compensation in full for cost-plus work.

## **32. SUSPENSION OF WORK**

- 32.1 The Chief Operating Officer may for reasonable cause, by an order in writing, at any time, stop or suspend any part of the work, or direct any portion to be commenced or completed in priority to any other part or portion, or may cancel the order to proceed with the work, or with any part thereof, and the Contractor shall not be entitled to any additional payment for anticipated profit, or for damages or otherwise, howsoever, by reason of such order.

- 32.2 When in the opinion of the Chief Operating Officer, for any reason it is deemed advisable to discontinue the work, or any part thereof for the winter, the Contractor must, on notice from the Chief Operating Officer forthwith place the work in proper and satisfactory condition for the accommodation of the public, and for its effectual protection against damage from rain, snow, frost, ice, or other causes, and must so maintain it.
- 32.3 When work is ordered or permitted by the Chief Operating Officer to be done during freezing weather, the Contractor shall provide the necessary means for heating, and all the materials required in the work shall be heated.
- 32.4 Unless otherwise directed in writing by the Chief Operating Officer, all masonry, concrete, painting, roadway and other work liable to be injuriously affected by frost, or which cannot in the opinion of the Chief Operating Officer, be satisfactorily proceeded with because of the condition of the weather, must be put in proper and satisfactory condition and be carefully and well protected from damage by frost at all times, all at the cost and expense of the Contractor.

### **33. SUBLETTING**

- 33.1 The Contractor shall keep the work under his/her personal control.
- 33.2 Every Contractor who proposes to sublet any portion of the work must have completed the respective page or pages supplied in the Tender Form giving a complete list of the names and addresses of the persons, firms or corporations to whom he/she proposes to sublet and the portion of the work which he proposes to sublet to each.
- 33.3 After award of the Contract, the Contractor shall not sublet any portion of the work to any Sub-contractor not named in his/her Tender Form as aforesaid without the consent of the Board.
- 33.4 The fact that the Contractor is permitted to sublet any portion of the work as aforesaid shall not, however, relieve him/her of any responsibility for the proper commencement, execution and completion of the work according to the terms of the Contract, and the Contractor shall be fully responsible for the Sub-contractor and his work and acts, and shall, either in person or through an accredited agent, receive all notices, communications, orders, instructions, or legal service; as if he/she were performing the work with his/her own plant and his/her own men/women.
- 33.5 Sub-articles 33.1 to 33.4 hereof shall not apply to the furnishing of material for the different parts of the work, for which material; however, the Contractor will be held strictly responsible, and no excuse for the quality of material or for the non-delivery in good time by any Sub-contractor, as affecting the progress of the works, will be entertained.

### **34. USE OF HYDRANTS AND WATER**

- 34.1 Necessary arrangements for the supply of water shall be made by the Contractor with the proper officials of the area municipality or other municipality involved and any charges which may be made by the area municipality or other municipality for the use of water shall be paid by the Contractor, except as provided hereunder.
- 34.2 If required by the area municipality or other municipality, a meter shall be installed to measure water supplied.

- 34.3 The Contractor shall comply with the regulations of the respective area municipalities or other municipalities regarding the use and care of hydrants and any damage to hydrants caused by the Contractor's operation shall be his/her responsibility, but if the Contractor fails to make good such damage, the Board will effect the necessary repairs and retain the cost from any monies due the Contractor.
- 34.4 Before final payment is made by the Board the Contractor shall satisfy the Chief Operating Officer that all accounts for water have been paid.
- 34.5 The Chief Operating Officer may order the installation of a meter, and if so installed, or if the Contractor has installed one without such order, then, from the date of installation, all water supplied the Contractor through the meter, for any purpose, will be charged for at the meter rates provided by the area municipality or other municipality supplying it.
- 34.6 The Board shall bear all charges for all water used in the testing and chlorination of water works installations.

### **35. SURVEY STAKES, LINES AND LEVELS**

- 35.1 The Chief Operating Officer shall furnish all surveys, unless otherwise specified.
- 35.2 The Contractor shall give the Chief Operating Officer at least 36 hours' notice in writing before requiring any levels, lines or stakes, on any portion of the work, and he/she shall clearly state in such notice the exact locality or localities where such are needed for immediate use.
- 35.3 The Contractor shall satisfy himself/herself, before commencing work at any point, as to the meaning and correctness of all stakes and marks, and no claim will be entertained by the Board for, or on account of, any alleged inaccuracies, or for alterations subsequently rendered necessary on account of such alleged inaccuracies, unless the Contractor notifies the Chief Operating Officer thereof in writing, before commencing to work therefrom.
- 35.4 The Contractor shall be responsible for the preservation of all stakes and marks in their proper positions and if any of them are disturbed, lost or destroyed, after having once been given, he/she shall at once notify the Chief Operating Officer in writing, and all expenses incurred by the Board in replacing the same shall be charged against the Contractor and deducted or collected, as provided in article 48 entitled "Monies Due the Board of Management of the Toronto Zoo".
- 35.5 Since the stakes and marks set will not in all cases represent all the grades, levels, lines and angles, or changes of surface, lines or levels, in the finished work, the Contractor shall see that they are taken and read correctly in connection with the Plans, Details, Specifications, and directions of the Chief Operating Officer, and if he discovers or suspects any errors in the same, he shall at once discontinue work until such errors are investigated and rectified; but no claim shall be made or allowed on account thereof, or on account of any delay occasioned thereby.
- 35.6 All work shall conform to the lines and levels given by the Chief Operating Officer, and shall be built in accordance with the Plans and directions given from time to time by him, subject to such modifications and additions as shall be deemed necessary by him during its execution; and in no case shall any work in excess of the requirements of the Plans and Specifications be paid for unless ordered in writing by him.

35.7 Any work done without lines, levels and instructions having been given by the Chief Operating Officer, or without the supervision of an Inspector, shall not be estimated nor paid for, and work so done shall be removed and replaced at the Contractor's sole cost and expense.

35.8 The contractor shall arrange for subsurface utility locates and co-ordinate these with the Chief Operating Officer.

### **36. ASSISTANCE**

36.1 The Contractor shall furnish the Chief Operating Officer, or any of his assistants, with any reasonable help which he or they may require at any time in driving stakes or in setting out the work and shall furnish the said parties, or any of the Inspectors, at all times, with convenient means of access to all parts of the work, and with all required assistance to facilitate thorough examination of the same, and inspection, culling and removal of doubtful or defective materials, and for any other purpose required in connection with the said works or in the discharge of their respective duties, for which services no additional allowance will be made.

### **37. CONVENIENCES**

37.1 The Contractor shall provide, and properly maintain in clean condition, modern and convenient privy or water closet accommodation for his/her workers so that they shall not be a source of inconvenience, complaint or nuisance to the public, or to residents in the vicinity of the work.

37.2 From the first of November to the first of April, the Contractor shall provide, at his own expense, an adequate, warm, comfortable shelter, accessible during the noon hour and inclement weather, to all the workers employed on the work, and its location shall be approved by the Chief Operating Officer.

### **38. OWNERS' RIGHTS**

38.1 The Contractor shall afford all necessary and reasonable facilities to the Board, or any of its employees or workers, as well as to any third party owning or operating any railway, tramway, vessels, wires, pipes or conduits, or other works or property, on, along, or near, the line of the work, or in its vicinity, he/she shall notify all such third parties before interfering with any of their property, rights, or privileges, and shall work in harmony with them as far as he/she possibly can, otherwise he shall notify the Chief Operating Officer, in writing, of his/her failure to do so, or of any difficulty that may at any time arise which he/she may be unable to overcome, in which case the Chief Operating Officer shall deal with the matter as in his judgment may seem right and proper, and the Contractor shall abide by the decision and direction of the Chief Operating Officer.

38.2 Any property of such third parties which the Chief Operating Officer orders to be moved by the Contractor, must be handled with care and must be neatly piled up and preserved free from injury or loss, and must be properly and satisfactorily replaced if so required under any of the provisions of the Contract, all at the Contractor's sole expense and to the satisfaction of the Chief Operating Officer.

38.3 The Chief Operating Officer shall have the right, at any time before, during the construction or after the completion of the work, to open up any portion of the work or the ground or roadway, or to grant permission for such opening to be made or left by the Contractor, as he, the said Chief Operating Officer, may deem advisable, for the purpose of examining, repairing or laying any water, gas or other pipe, sewer, drain, track or other underground or surface construction, or to

cause any such work as he may deem necessary or advisable to be done, and such permission, or the exercise of such rights, either by the Chief Operating Officer or by any other person or corporation having the requisite authority (either statutory or otherwise), shall not relieve the Contractor from any of his/her responsibilities or obligations, nor shall the opening up of any portion of the work for these or any other purposes, or by any other parties, relieve the Contractor of such responsibilities or obligations, except only for the portion of the work actually torn up and destroyed, and then only in case the Contractor applies in writing for such relief at the time the work is being done, or within ten (10) days afterwards, and can demonstrate to the satisfaction of the Chief Operating Officer, that such relief should be granted.

- 38.4 The Contractor shall not enter upon or occupy with men, tools, or materials of any nature, any lands outside of the public streets and roadways and the right-of-way shown on the Plans, except after consent has been received by him/her from the proper parties, and a certified copy of such consent has been furnished to the Chief Operating Officer.
- 38.5 The Board of Management of the Toronto Zoo and its engineers, agents and employees may at any time and for any purpose enter upon the work and premises used by the Contractor, and the Contractor shall provide proper and safe facilities therefor.
- 38.6 Other contractors shall have the right, when so authorized in writing by the Chief Operating Officer, to enter upon the work and the premises used by the Contractor for all purposes which may be required by their contracts.
- 38.7 Any differences or conflicts which may arise between the Contractor and other contractors in regard to their work shall be determined and adjusted by the Chief Operating Officer.
- 38.8 The Contractor shall furnish proper facilities by means of ladders or otherwise to secure convenient access to all parts of the work, as may be required by the Chief Operating Officer.

**39. FAIR WAGE POLICY (extracted from Schedule A of the City of Toronto Municipal Code, Chapter 67)**

39.1 Definitions

As used in this Fair Wage Policy, the following terms have the meaning indicated:

**CONTRACT** – A legal, business agreement between the City of Toronto and the Contractor to perform work or services or in the provision of materials and supplies.

**CONTRACTORS** – The prime contractor with the City of Toronto performing work or services in the execution of the Contract.

**FAIR WAGE SCHEDULE** – Stipulated rates of pay for different classifications of work produced and obtainable from the Fair Wage Office.

**FIELD WORK** – All work in performance of the Contract that is not shop work.

**FRINGE BENEFITS** – Includes such benefits as company pension plans, extended health care benefits, dental and prescription plans, etc. It does NOT include legislated payroll deductions such as C.P.P., E.H.T., W.S.I.B. or E.I.C.

**NON-COMPLIANCE** – The occurrence of any of the following conditions:

- (a) Contractor fails to co-operate with the Manager, Fair Wage Office in fulfilling his/her responsibilities under the Fair Wage Policy and the Labour Trades Contractual Obligations in the Construction Industry.
- (b) Sub-contractor fails to co-operate with the Manager, Fair Wage Office in fulfilling his/her responsibilities under the Fair Wage Policy and the Labour Trades Contractual Obligations in the Construction Industry.
- (c) Contractor or Sub-contractor has been found in violation of the Fair Wage Policy (non-compliance applies to both Contractor and Sub-Contractor).
- (d) Contractor has been found in violation of the Labour Trades Contractual Obligations in the Construction Industry.
- (e) Sub-contractor has been found in violation of the Labour Trades Contractual Obligations in the Construction Industry.

**SHOP WORK** – Any work in performance of the Contract that is done in or at any factory, foundry, shop or place of manufacture not located at or upon the site of the work, and not operated solely for the purpose of the work.

**SUB-CONTRACTORS** – Any agent of the prime contractor or any Sub-contractor hired to perform any of the work or services in the execution of the Contract.

**WAGES or RATE OF WAGES** – Includes the hourly rate, vacation and holiday pay and any applicable amount for fringe benefits shown in the current Fair Wage Schedule, to be paid to the worker as part of the worker's wages or for the worker's benefit provided for in any collective agreement applicable to that worker.

**WORKERS** – Includes mechanics, workers, labourers, owners and drivers of a truck or other vehicle employed in the execution of the Contract by the Contractor or by any Subcontractor under them and clerical staff.

### 39.2 Purpose and History, Fair Wage Policy.

- (i) The Fair Wage Policy has a central principle the prohibition of the City doing business with Contractors, Sub-contractors and suppliers who discriminate against their workers.
- (ii) Originally implemented in 1893 to ensure that contractors for the City paid their workers the union rates or, for non-union workers, the prevailing wages and benefits in their field, the Fair Wage Policy has expanded over the years to other non-construction classifications such as clerical workers.
- (iii) The Policy also requires compliance with acceptable number of working hours and conditions of work in order to protect the rights of workers.

### 39.3 Intent, Fair Wage Policy.

The intent of the Fair Wage Policy can be summarized as follows:

- (i) To produce stable labour relations with minimal disruption.
- (ii) To compromise between the wage differentials of organized and unorganized labour.
- (iii) To create a level playing field in competitions for City work.
- (iv) To protect the public; and

- (v) To enhance the reputation of the City for ethical and fair business dealings.

#### **39.4 Establishment of Rates.**

- (i) Establishing fair wage rates and schedules are intended to minimize potential conflicts between organized and unorganized labour in the tendering and awarding of civic contracts.
- (ii) Fair Wage rates are established through discussion with employee and employer groups and associations (having both union and non-union members).
- (iii) These rates are reviewed by the above-noted groups and are recommended to Council, by the Manager, Fair Wage Office for approval on a regular basis.
- (iv) Certain designated construction related rates are based on the lowest rate established by collective bargaining, while the wage rates for other classifications are based on market and industrial surveys in accordance with the prevailing wages for non-union workers in the geographic area.
- (v) Similarly, the City encourages contractors to hire and train apprentices under approved programs.
- (vi) In this regard, guidance on appropriate fair wage rates (including an appropriate factor for apprenticeship programs for construction related trades) will be sought from employee and employer groups as part of establishing Fair Wage Schedules.

#### **39.5 City of Toronto Council References.**

- (i) City of Toronto Council, by the adoption of Corporate Services Committee Report No. 13, Clause No. 1, as amended, at its meeting of October 1 and 2, 1998, directed that the Fair Wage Policy of the former Municipality of Metropolitan Toronto be adopted for all City Departments, Agencies, Board and Commissions and replace all existing fair wage policies of the former local municipalities.
- (ii) City of Toronto Council, by the adoption of Administration Committee Report No. 7, Clause No. 1, as amended, at its meeting of June 18, 19 and 20, 2002, directed that certain changes be made to the Fair Wage Policy and Procedures.
- (iii) City of Toronto Council, by the adoption of Administration Committee Report No. 5, Clause No. 2, as amended at its meeting of June 24, 25 and 26, 2003 directed that certain further changes be made to the Fair Wage Policy and Procedures, and to the Fair Wage Rate Schedule.

#### **39.6 Application.**

- (i) The provisions of the Fair Wage Policy apply equally to contractors and all sub-contractors engaged in work for the City of Toronto. It is understood that contractors cannot sub-contract work to any sub-contractor at a rate lower than called for in the Fair Wage Policy. Contractors or general contractors will be responsible for any violations or non-compliance issues arising from the engagement of any sub-contractor on City work.
- (ii) The fair wage rates do not apply to small businesses, typically those with owner-operators, or partnerships, or principals of companies as long as they undertake the work themselves.
- (iii) It should be noted that under the above City of Toronto Council Reference authorities, the conditions of the Fair Wage Policy cannot be waived, unless authorized by Council to do so.

**39.7 Contractor and Sub-contractor Responsibilities.**

- (i) The contractor or sub-contractor shall not discriminate against workers or applicants for employment as workers because of race, creed, colour, national origin, political or religious affiliation, sex, sexual orientation, age, marital status, family relationship or disability.
- (ii) The contractor shall at all times comply with the *Occupational Health and Safety Act* and its regulations and take every precaution reasonable in the circumstances for the protection of workers. If the contractor sub-contracts any or all of the work or services to be performed, the contractor will ensure the sub-contractors are qualified to perform the work or services and comply with the *Occupational Health and Safety Act* and its regulations.
- (iii) The contractor or sub-contractor shall pay or cause to be paid weekly or biweekly to every worker employed in the execution of the contract (and shall see that every owner of a truck or other vehicle employed by the contractor or by any subcontractor in the execution of the contract shall pay, or cause to be paid, weekly or biweekly to each of the owner's drivers) wages at the following rates, namely:
  - (a) For workers employed in shop work:
    - (1) the Union rate of wages in the particular district or locality in which the work is undertaken for any class or work in respect of which there is such Union rate; and
    - (2) for any class of work for which there is no such Union rate, the rate of wages shall be the rate of wages, as determined by the Manager, Fair Wage Office prevailing in the particular district or locality in which the work is undertaken.
  - (b) For workers employed in field work:
    - (1) where the contractor or sub-contractor is in contractual relationship with a Union recognized by the Ontario Labour Relations Board as the bargaining agent for the relevant workers, the applicable rate of wages set out in the collective agreement.
    - (2) where there is no such contractual relationship, a rate not less than that set out for such work in the Schedule of Wage Rates filed by the Manager, Fair Wage Office, with the City Clerk of the Corporation after being first approved by Toronto Council (hereinafter called "the Fair Wage Schedule"); and,
    - (3) for any class of work for which there is no rate, the rate of wages shall be the rate of wages, as determined by the Manager, Fair Wage Office, prevailing in the particular district or locality in which the work is undertaken.
- (iv) The contractor and sub-contractor shall:
  - (a) At all times keep a list of the names and classifications of all workers employed in the work, the hourly rate and hours worked per day and a record of the amounts paid to each.
  - (b) From time to time, if demanded by the Manager, Fair Wage Office, furnish a certified copy of all paysheets, lists, records and books relating to the work and keep the originals thereof open at all times for examination by the Manager; and
  - (c) At all times furnish and disclose to the said Manager any other information respecting wages of workers that may be desired by the Manger in connection with the work.



- (d) The Fair Wage Office will have the authority to request any information respecting wages of workers, names of workers, records of amounts paid to each, paysheets, original books, etc. that may be desired by the Manager in connection with a contract that has been substantially completed within the past six months.
- (e) Failure to co-operate will be considered non-compliance with the Fair Wage Policy.
  
- (v) The contractor or sub-contractor shall not compel or permit any worker engaged for the Work to work more than the number of hours per day and the number of hours per week set out in the Fair Wage Schedule for the particular type of work involved except in case of emergency, and then only with the written permission of the Commissioner or head of the Department having charge of the work or the person then acting as such.

### 39.8 Manager, Fair Wage Office, Responsibilities.

- (i) In case of a jurisdictional dispute or dispute as to rate of wages to be paid under the contract or as to the amount to be paid to any worker, the decision of the Manager, Fair Wage Office, shall be final and binding upon all parties.
- (ii) If the contractor or sub-contractor fails to pay any worker (or if any owner of a truck or other vehicle fails to pay any driver) wages at the rate called for in paragraph (D), the Corporation may charge an administrative fee not in excess of fifteen percent of the balance necessary to make up the amount that should have been paid from the contractor's progress draw or holdback, and may pay the worker(s) directly for any back-wages owing directly from the contractor's progress draw or holdback.
- (iii) If the contract is to be for the purchase of supplies or materials to which the provisions in Subsection A7 respecting the rates of wages to be paid to workers engaged in shop work and field work do not apply, Toronto Council will, before awarding same, cause to be secured from the Manager, Fair Wage Office, a recommendation as to whether or not the tenderer or bidder maintains a fair wage level.
- (iv) If a tenderer or bidder is found not to comply with the Fair Wage Policy the Manager may recommend the next lowest bidder for contract award in the following circumstances:
  - (a) an investigation is underway and the firm does not co-operate in providing timely information requested by the Manager, Fair Wage Office in fulfilling his/her responsibilities under the Fair Wage Policy and the Labour Trades Contractual Obligations in the Construction Industry and operationally, the provision of goods and/or services cannot be delayed.
  - (b) a contractor or sub-contractor is in violation of the Fair Wage Policy and has not paid restitution to its workers.
  - (c) a contractor or sub-contractor is unable to comply with the City of Toronto Labour Trades Contractual Obligations in the construction industry.
  
- (v) Workers engaged in clerical office work are to be paid a rate of wages no less than the surveyed standard for each classification of worker for the particular industry at the time of tendering.
- (vi) The contractor and sub-contractor MUST display legible copies of this "Fair Wage Policy" in a prominent position in his/her workshop(s), accessible to all employees.
- (vii) The contractor shall attach to all accounts rendered for payment of money upon the contract, as requested by the Manager, Fair Wage Office and for the final account, a

declaration affirming that the requirements of the foregoing paragraphs have been fully complied with.

### **39.9 Disqualification Provisions**

- (i) When a contractor or any sub-contractor is found to be in non-compliance with the provisions of the Fair Wage Policy in two separate instances over a period of three years inclusive, the Manager, Fair Wage Office must report and may recommend to the Administration Committee that the said contractor or sub-contractor be disqualified from conducting business with the City for a period of two (2) years inclusive.
- (ii) After the disqualifying period is over, the said contractor or sub-contractor will be placed on probation for the next contract year. If another non-compliance violation occurs, the Manager, Fair Wage Office must report and may recommend to the Administration Committee that the said contractor or sub-contractor be disqualified from conducting business with the City for an indefinite period of time.
- (iii) All non-compliance activities (including firm names) and disqualification statistics will be reported to Council annually. Disqualified firms will be published on the City's web site.

### **40. REMOVAL OF EMPLOYEES**

- 40.1 Should any superintendent, foreman or worker employed on or about the work, or in connection therewith, give any just cause for complaint, of which the Chief Operating Officer shall be the sole judge, such person shall be removed from the work by the Contractor upon written instruction of the Chief Operating Officer.

### **41. CONDUCT AND CALIBRE OF WORKERS**

- 41.1 The Contractor shall at all times enforce strict discipline and good order among his/her employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her.

### **42. BRIBERY**

- 42.1 Should the Contractor or any of his/her agents give or offer any gratuity to or attempt to bribe any member of the Board of Management of the Toronto Zoo or City of Toronto Council, officer or employee of the Board of Management of the Toronto Zoo, the Board of Management of the Toronto Zoo shall be at liberty to cancel the Contract forthwith, or to direct the Chief Operating Officer to take the whole or any part of the works out of the hands of the Contractor, under the provisions of article 50, entitled "Forfeiture of Contract".

### **43. PAYMENTS**

- 43.1 Subject to sub-article 43.14 hereof, the Contractor shall be entitled to receive monthly payments at the rate of 90% of the value of the work actually done, including materials supplied or placed, less all stipulated forfeitures and deductions, according to the estimate of the Chief Operating Officer. Contractor shall date applications for payment last day of each month and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.

- 43.2 Submit to Consultant at least 14 days before first application for payment, schedule of values for parts of Work, identifying the complete works including each and every division of work, aggregating total amount of Contract Price, so as to facilitate Consultants evaluation of Contractors Applications for Payment.
- 43.2.1 Schedule of values shall follow the Contractors Breakdown of Application for Payment. Item number and Descriptions shall follow the specification sections and pricing forms.
- 43.2.2 Schedule of values must identify the complete works including each and every division of work, cash allowances, additional prices, change orders as approved, overhead costs and must total the approved contract value.
- 43.2.3 No payments will be made until a Schedule of Values is submitted in an approved format and approved by the Zoo and its Consultants.
- 43.3 Subject to sub-article 43.14 hereof, each monthly payment shall be made pursuant to and within fifteen (15) days after the issue of a Progress Payment Certificate which shall be prepared not later than ten days after the expiration of the monthly period in which Work proceeded, taking into account extras, alterations and deductions performed during such monthly period.
- 43.4 Each such Progress Payment Certificate shall be based on approximate estimates only and shall not be taken or construed as an acceptance of the Work so estimated, or as an admission that the Board of Management of the Toronto Zoo is in any way liable to the Contractor in respect thereof.
- 43.5 When payment is made to the Contractor on a Progress Payment Certificate, the Contractor shall promptly pay to every Sub-contractor employed by him any amount properly due such Sub-contractor on account of work covered by such Certificate.
- 43.6 If the Contractor has provided the Chief Operating Officer with sworn and documented proof of publication of certification of Substantial Performance of the Work as provided in section 32 of the Construction Lien Act, 1983 (referred to in this article 43 as "the Act"), and if on expiry of the Forty-Five (45) Days next following the date of such publication there are no liens preserved within the meaning of Part V of that Act in connection with the work, a certificate marked "Substantial Performance Payment Certificate" at the rate of 100% of the value of all sub-contracts in respect of which sub-article 43.7 hereof has come into operation, plus 95% of the value of all other work completed under the Contract to the time of Substantial Performance, less forfeitures and deductions as aforesaid, shall be delivered to the Contractor.
- 43.7 Notwithstanding anything to the contrary contained in these General Conditions outside this sub-article 43.7, if a direct Sub-contract with the Contractor has been certified complete under section 33 of the Act and the Board of Management of the Toronto Zoo may make without jeopardy a payment reducing the statutory holdback in accordance with section 25 of the Act in respect of that sub-contract,
- (i) the Contractor shall be entitled to receive an amount that will bring the amount paid in respect of that sub-contract to a rate of 100% of the value thereof;
- (ii) such amount shall be certified for payment either in a subsequent Progress Payment Certificate or, if the Chief Operating Officer deems it more convenient, by a separate certificate marked "Sub-contract Payment Certificate for ", specifying the work covered by the sub-contract; and

- (iii) the consent of the Contractor's Surety shall be deemed to have been given for the payment of each such amount, without prejudice to the rights of the Board of Management of the Toronto Zoo against the Surety.

43.8 If for any reason whatever there is no publication of certification of Substantial Performance, and if on expiry of the forty-five (45) Days next following full completion of the work there are no liens preserved within the meaning of Part V of the Act in connection with the work, a certificate marked "Full Completion Payment Certificate" at the rate of 100% of the value of all sub-contracts in respect of which sub-article 43.7 hereof has come into operation, plus 95% of the value of all other work completed under the Contract less forfeitures and deductions as aforesaid, shall be delivered to the Contractor.

43.9 The amount certified in any Substantial Performance Payment Certificate, Sub-contract Payment Certificate or Full Completion Payment Certificate shall be paid to the Contractor within Fifteen (15) Days of the return of such certificate to the Board of Management of the Toronto Zoo signed unaltered by the Contractor, together with the Workplace Safety & Insurance certification referred to in sub-article 43.14 hereof.

43.10 Where a Substantial Performance Payment Certificate has previously been issued, on expiry of the later of

- (i) the Sixty (60) Days immediately following the publication date referred to in sub-article 43.6 hereof;
- (ii) the Forty-Five (45) Days immediately following completion of all work,

and in all other cases, on expiry of the Sixty (60) Days immediately following completion of all work, if there are no liens preserved within the meaning of Part V of the Act and sub-article 43.12 hereof and all other obligations of the Contractor under the Contract have been fully complied with, a certificate marked "Final Payment Certificate" for the balance owing to the Contractor for the work, including extras and less forfeitures and deductions as aforesaid, shall be issued and the amount therein certified for payment.

If the 60-day period referred to in clause (i) of sub-article 43.10 hereof expires before the 45-day period referred to in clause (ii) thereof, and there are on such expiry no outstanding defects in the work which was completed as of the date of Substantial Performance, or lien claims preserved under the Act, and if the Chief Operating Officer is of the opinion that

- (i) there will be a lengthy delay before the 45-day period expires;
- (ii) the delay is beyond the Contractor's control; and
- (iii) the delay will cause the Contractor financial hardship,

the Chief Operating Officer may issue after expiry of the period referred to in clause (i) of sub-article 43.10 a certificate marked "Deficiency Holdback Payment Certificate" for 5% of the value of the work completed as of the date indicated in the Substantial Performance Payment Certificate and not certified pursuant to sub-article 43.7 hereof, and the amount indicated thereon, less deductions and forfeitures as aforesaid, shall then be paid to the Contractor.

43.11 Notwithstanding sub-article 43.10 hereof, if

- (i) the work is fully complete;
- (ii) there are no outstanding defects in the work, or lien claims under the Act; and
- (iii) the Contractor deposits with the Chief Operating Officer bearer bonds approved of, and in amount satisfactory to, him/her as collateral security for the due and proper performance of the Contractor's obligations under the Contract the Final Payment Certificate referred to in sub-article 43.10 hereof shall be issued and the amount therein certified for payment, and the said bearer bonds shall be returned to the Contractor once the date of expiry prescribed in sub-article 43.10 has passed and the Contractor has performed its said obligations as aforesaid, provided that the Contractor shall have the right to obtain any interest coupons attached to such bonds as such coupons become payable, unless the Contractor is in default under the Contract.

43.12 Before the amount certified in either a Substantial Performance Payment Certificate, Full Completion Payment Certificate or a Final Payment Certificate is paid, the Contractor shall deposit with the Chief Operating Officer current certification from the Workplace Safety & Insurance Board that all assessments against the Contractor and (except for a Final Payment Certificate) each and every Sub-contractor who has performed work or supplied material whose value is wholly or partly included in such Certificate, have been paid.

43.13 In addition to the certification required by sub-article 43.12 hereof, before the amount certified in either a Substantial Performance Payment Certificate, a Full Completion Payment Certificate or a Final Payment Certificate is paid, the Contractor shall provide to the Chief Operating Officer the Statutory Declaration referred to in article 39.8.

43.14 Notwithstanding sub-articles 43.1 and 43.3 hereof, the Contractor shall, before becoming entitled to payment under the first Progress Payment Certificate, deposit with the Chief Operating Officer a Workplace Safety & Insurance certificate that there are no outstanding assessments against the Contractor, and the Chief Operating Officer may, at the end of a calendar or Contract year, or at any other time, make the deposit of Workplace Safety & Insurance certification as contemplated in sub-article 43.12 hereof, a pre-condition of payment under any subsequent Payment Certificate.

43.14.1 The first application for payment shall include:

- a. Contractors invoice;
- b. Contractors schedule of values;
- c. WSIB clearance certificate dated within 10 days of the invoice date.

43.14.2 The second and subsequent application for payment shall include:

- a. Contractors invoice;
- b. Contractors schedule of values;
- c. WSIB clearance certificate dated within 10 days of the invoice date.
- d. Statutory Declaration as a sworn statement that all accounts for labour, subcontracts, Products, construction machinery and equipment, and other indebtedness which may have been incurred by the Contractor in the Work and for which the Owner might in any way be held responsible

have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute.

- e. Revised project schedule.

43.15 The Board of Management of the Toronto Zoo shall not be liable for, or be held to pay, any money to the Contractor except as provided above; and, on making payment under the Final Payment Certificate, the Board of Management of the Toronto Zoo shall be released from all claim or liability to the Contractor for anything done, or furnished for, or relating to the work, or for any act or neglect of the Board of Management of the Toronto Zoo relating to or affecting the work, except the claim against the Board of Management of the Toronto Zoo for the remainder, if any, of the amounts kept or retained as provided above.

43.16 Payments to the Contractor shall be made out of the Funds under the control of the Board of Management of the Toronto Zoo in its public capacity, and no member of the Council or officer of the Board of Management of the Toronto Zoo is, or is to be held, personally liable or responsible to the Contractor under any circumstances whatever.

#### **44. RECORDS**

44.1 The Contractor shall maintain and keep accurate Records relating to the Work, Changes in the Work, Extra Work and claims arising therefrom. Such Records shall be of sufficient detail to support the total cost of the work, Changes in the Work, and Extra Work. The Contractor shall preserve all such original Records until 12 months after the Final acceptance Certificate is issued or until all claims have been settled, whichever is longer. The Contractor shall require that Subcontractors employed by the Contractor preserve all original Records pertaining to the Work, Changes in the Work, Extra Work and claims arising therefrom for a similar period of time.

44.2 If, in the opinion of the Chief Operating Officer, Daily Work Records are required, such records shall report the labour and Equipment employed and the Material used on any specific portion of the Work. The Daily Work Records shall be reconciled with and signed by the Contractor's representative each day.

44.3 The Owner may inspect and audit the Contractor's Records relating to the Work, Extra Work and Changes in the Work at any time during the period of the Contract. The Contractor shall supply certified copies of any part of its Records required whenever requested by the Owner.

#### **45. ARBITRATION**

45.1 In the case of any dispute arising between the Board of Management of the Toronto Zoo and the Contractor as to their respective rights and obligations under the contract, either of the parties hereto may give to the other notice of such dispute and request an arbitration thereof and the parties by mutual agreement may submit such dispute to arbitration and the provisions, save as hereinafter provided, of the Arbitrations Act of Ontario shall apply to such arbitration, including the provision for appeal therein.

45.2 The arbitration shall be by a board of one member provided the Contractor and the Board of Management of the Toronto Zoo can agree on the appointment of such member and in the event that the Contractor and the Board of Management of the Toronto Zoo do not agree on such appointment, then either party shall notify the other party in writing of its desire to submit the

dispute or difference to arbitration, and the notice shall contain the name of the first party's appointee to the Arbitration Board, whereupon the recipient of the notice shall, within seven days, inform the other party of the name of its appointee to the Arbitration Board and the two members, so selected, shall, within five days of the appointment of the second of them, appoint a third person who shall be chairperson.

- 45.3 Arbitration proceedings shall not take place until after the issuance of the Final Payment Certificate as provided in article 43.10 and all disputes arising out of the Contract shall be accumulated and determined at one arbitration proceeding.
- 45.4 Each of the parties shall bear its or his/her own costs in connection with such proceedings and the Arbitration Board shall have no power to award costs to either party.
- 45.5 Where the Board of Arbitration consists of one member, the fees of such member shall be shared by the parties equally, and where the Board consists of three members each of the parties shall pay the fees of its appointees and share the fees of the chairperson equally.
- 45.6 The parties shall share equally any other expenses of the arbitration such as meeting rooms and reporters if engaged by mutual agreement.

#### **46. INTEREST**

- 46.1 The Contractor shall not be entitled to any interest upon any bill on account of delay in its approval by the Chief Operating Officer.

#### **47. CANADIAN FUNDS**

- 47.1 All deposits by a tenderer or payments to the Board of Management of the Toronto Zoo by a contractor shall be made either in cash in Canadian funds at City of Toronto or by marked cheque drawn on a chartered bank authorized to carry on business in Canada and all payments by the Board of Management of the Toronto Zoo to the Contractor under the Contract shall be made in like funds.

#### **48. MONIES DUE THE BOARD OF MANAGEMENT OF THE TORONTO ZOO**

- 48.1 All monies payable to the Board of Management of the Toronto Zoo by the Contractor under any stipulation herein, or to the Workplace Safety & Insurance Board, as provided in article 24 entitled "Contractor's Liability" may be retained out of any monies then due, or which may become due, from the Board of Management of the Toronto Zoo to the Contractor under the Contract or any other Contract with the Board of Management of the Toronto Zoo or otherwise howsoever, or may be recovered from the Contractor or his/her Surety, in any court of competent jurisdiction, as a debt due to the Board of Management of the Toronto Zoo; and the Chief Operating Officer shall have full power to withhold any estimate or certificate, if circumstances arise which may indicate to him the advisability of so doing, though the sum to be retained may be unascertained.

#### **49. LIENS**

- 49.1 The Contractor, his surety and their respective heirs, executors, administrators, successors and assigns, and any of them, and all other parties in any way concerned, shall fully indemnify the Board of Management of the Toronto Zoo and all its officers, agents and employees from any and all liability or expenses by way of legal costs or otherwise in respect to any claim which may be

made for a lien or charge at law or in equity or to any claim or liability under the Construction Lien Act, R.S.O. 1990 c. C.30 of Ontario or to any attachment for debt, garnishee process or otherwise.

49.2 The Board of Management of the Toronto Zoo may, at any time, withhold from the Contractor an amount sufficient to pay any and every lien against the work of which it has notice, together with the required security for costs in connection with any vacating order(s), and should the Contractor not promptly pay the amount declared by the Court to be due the claimant, the Board of Management of the Toronto Zoo is authorized to make such payment and shall deduct the amount thereof from monies due the Contractor.

49.3 The Board of Management of the Toronto Zoo shall not in any case be liable to any greater extent than the amount owing by it to the Contractor, his/her executors, administrators, successors and assigns.

## 50. FORFEITURE OF CONTRACT

50.1 In any of the cases described in sub-article 50.2 hereof, after 24 hours' written notice from the Chief Operating Officer to the Contractor, the Chief Operating Officer shall have the full right and power at his discretion, without process or action at law, to take the work or any part thereof specified in the said notice, out of the hands of the Contractor, and either relate the same to any other person or persons, with or without its being previously advertised, or may employ workers and provide material, tools, transportation and all other necessary things at the Contractor's expense, or may take such other steps as the Chief Operating Officer may consider necessary or advisable, in order to secure the completion of the work to his satisfaction.

50.2 The following are the cases referred to in sub-article 50.1 hereof:

(i) if the Contractor neglects or refuses

- (a) to sign the Plans before commencing the work;
- (b) to commence the work within seven (7) days after the date of the Chief Operating Officer's order to commence;
- (c) to execute the work or any part thereof in a sound and workmanlike manner, and in all respects in strict conformity with the Contract in the judgement of the Chief Operating Officer;
- (d) to conduct the work, when so ordered by the Chief Operating Officer, forthwith so as to ensure its entire completion in the judgement of the Chief Operating Officer within the time stipulated;
- (e) to complete the work on time as aforesaid;
- (f) to take down, re-build, repair, alter or amend any defective or unsatisfactory work;
- (g) to remove any condemned material or workmanship and replace the same with proper material and workmanship;
- (h) to comply with any reasonable order from the Chief Operating Officer;



- (i) to refrain from a course of persistent violation of any provision(s) of the Contract;
- (ii) if the Contractor
  - (a) transfers, assigns or sublets the Contract or the work or any part of either, or attempts to do so without the Chief Operating Officer's consent, other than as contemplated in the Contract;
  - (b) becomes bankrupt or insolvent;
  - (c) compounds with his/her creditors;
  - (d) commits any act of insolvency
- (iii) if the work or any part thereof is not progressing continuously and in such a manner, in the judgment of the Chief Operating Officer, as will ensure its entire completion on time in accordance with the stipulations in that regard in the Contract;
- (iv) if the Contractor or any of its agents gives or offers any gratuity to, or attempts to bribe, any member of the Board, or any officer, employee or agent of the Board of Management of the Toronto Zoo.

50.3 Where the Chief Operating Officer takes any part of the work out of the hands of the Contractor pursuant to sub-article 50.1 hereof

- (i) the Contractor shall vacate possession of, and give up, the work or specified part(s) thereof peaceably to the Chief Operating Officer;
- (ii) the Contractor and his/her surety shall be liable for all damages, expenditure and extra expenditure incurred by the Board of Management of the Toronto Zoo (including those for additional work thereby necessitated) by reason thereof in excess of those provided for in the Contract, together with the amount of liquidated damages from the date fixed for completion of the work, and the same may be deducted or collected by the Board of Management of the Toronto Zoo as provided in article 48;
- (iii) all the powers of the Chief Operating Officer respecting resolution of doubts, disputes and differences, and determination of any sum(s) or balance payable to or receivable from the Contractor, and otherwise concerning the Contract, shall nevertheless continue in force;
- (iv) the relative obligations of the Board of Management of the Toronto Zoo and the Contractor, and of his/her Surety, in respect of the remainder of the work (if any) shall not be affected, nor shall the Contractor or his/her Surety be excused from performing such remainder on time;
- (v) all material, plant, scaffolding, scantling, cofferdams, dredges, pumps and pumping machinery, fixed tackle and other erections, appliances and plant thereon, shall at the option of the Chief Operating Officer, remain on the work site until completion, at such rental (if any) as the Chief Operating Officer may deem reasonable.

- 50.4 The fulfillment by the Contractor of any stipulation in the Contract may be enforced by legal proceedings and judgment, or order of Court, without prejudice to any other remedy contained in the Contract.
- 50.5 If any balance of the Contract price, or other money payable by the Board of Management of the Toronto Zoo under the Contract, remains in the hands of the Board of Management of the Toronto Zoo upon the expiration of the period of guaranteed maintenance, referred to in article 28 the same shall be payable to the Contractor or the person legally representing him/her, but neither the Board of Management of the Toronto Zoo nor any officer thereof shall be liable or accountable to the Contractor in any way for the manner in which, or the price at which, the work, or any portion thereof, may have been or may be done or completed by the Chief Operating Officer.
- 50.6 Neither an extension of time for any reason beyond the date fixed herein for the completion of the Contract, nor the construction of and payment for any portion of the work called for by the Contract, shall be deemed to be a waiver by the Chief Operating Officer of the right to abrogate the Contract for abandonment, delay or any other reason consistent with the Specifications and these General Conditions.

## 51. HEALTH & SAFETY

### 51.1 Safety Requirements:

The Contractor shall conform to and enforce strict compliance with the Construction Safety Act, and Regulations made under that Act.

The Contractor, for purposes of the Occupational Health and Safety Act, will be designated as the Constructor for this project and will assume all of the responsibilities of the Constructor set out in that Act and its regulations.

It is mandatory that the successful Contractor and sub-contractor(s) attend a pre-construction meeting regarding the Occupational Health and Safety Act and relevant Zoo policies.

Specifically, it is the responsibility of the Contractor

- (i) to designate and advise the Project Co-ordinator of the name of the agent of the Contractor who is responsible to monitor the construction work site to ensure compliance with the OHS Act and the TZ Health and Safety Policy and to initiate corrective action to ensure compliance.
- (ii) to advise the Toronto Zoo of any designated substances, as defined by the OHS Act, to which their workers or Zoo employees may be exposed. It is the responsibility of the Contractor to ensure compliance with the designated substance regulations to reduce or eliminate worker exposure.
- (iii) to ensure that all work site accidents are promptly investigated to determine cause and that first aid is administered as required for all work related injuries. A written report of all such accidents shall be forwarded to the TZ Project Co-ordinator by the contractor which will include the corrective action taken to prevention of further accidents.
- (iv) to ensure that all hazardous materials, as defined by the WHMIS Regulation, brought on to the work site adhere to the WHMIS labeling, storage, safe handling, as use requirements and

that all workers under the supervision of the Contractor be trained to safely use these materials.

- (v) to supply, where specified by the OHS Act & regulations, appropriate safety and personal protective equipment and that all workers under the supervision of the Contractor be trained in the use of this equipment; to ensure, where applicable under the OHS Act, that Joint Health and Safety Committees, worker safety representatives or worker trade representatives are functioning on any work site established at the Toronto Zoo. The Contractor's Joint Health and Safety Committees, worker or trade representatives shall inform the Project Co-ordinator of all outstanding issues which may affect the health and safety of Zoo employees.

#### 51.2 Contractors Working In The Vicinity Of Animal Containments

- (i) Contractors, sub-contractors or their employees are not allowed, without the approval of the Animal Care Manager, or his designate
  - (a) to enter any paddock, holding cage or other enclosure in which an animal of any kind is housed.
  - (b) to attempt at any time or in any circumstance, to touch, handle or otherwise manipulate any animal.
  - (c) to cross safety barriers or enter non-public areas without prior approval as outlined above.
- (ii) Anyone who fails to comply with the above instructions will be considered in breach of their contract and escorted from Toronto Zoo property.
- (iii) In addition, a contractor, or his employee, may be fined by the Ministry of Labour, under the Occupational Health and Safety Act.

#### 51.3 Designated Substances And Zoo Contractors

- (i) **SILICA (designated Substance Assessment Completed)**

Silica is used by the Animal Care staff in a number of animal displays in various locations. The Occupational Health and Safety Division from the City of Toronto has conducted air sampling on two different occasions and found exposure levels to be well within the Time Weighted Average Exposure Level (TWael) deemed acceptable under the Regulation Respecting Silica-Occupational Health and Safety Act.
- (ii) **ISOCYANATES (Designated Substance Assessment Completed)**

Isocyanates are part of some paint products used by the Graphics Unit in the screening process. The Occupational Health and Safety Division from the City of Toronto has conducted air quality tests and found the TWael to be well within acceptable levels set out by the Regulation Respecting Isocyanates-Occupational Health and Safety Act.
- (iii) **MERCURY (Designated Substance Assessment Completed)**

A small quantity of mercury is on site in the form of thermometers in various locations and is found in the culture counter used in the Health Unit. With the small levels present, the

exposure risk to workers is within the guidelines established under the Regulation Respecting Mercury-Occupational Health and Safety Act. In event of a thermometer breaking mercury clean-up kits are available from the Health Unit.

(iv) **ASBESTOS (Designated Substance Assessment On-going)**

As of 1997-01-01 asbestos has been located in the following areas:

- (v) Marketing & Communications Centre, Pavilions, Maintenance Centre of Administrative-Support Centre, Polar Bear, Lower Elephant House on some elbow joints.

Asbestos is a component of the insulation in boilers and emergency generators. The insulation is covered by duct cloth fabric and does not present a risk to workers if left undisturbed.

## 52. ENVIRONMENT FIRST

52.1 The Toronto Zoo has recognized its responsibility as a public education facility with a strong conservation mandate and has, therefore, adopted an environmental policy. Within the scope of this call for quotations the following portions of the policy are noted.

52.2 Land Use

Protect, manage and regenerate natural areas of our site, considering the goals and objectives of the Rouge Valley Park. Within our ability, produce compost and wood chips to improve the quality of the soil.

52.3 Operations

Promote minimization of waste, pollutions and water and energy use wherever possible, ensure that all employees are aware of this policy, and reduce and/or eliminate hazardous chemical use. They will purchase environmentally sound goods and services where economically feasible.

We will work with our contractors and suppliers to minimize waste and other environmental impacts, comply with all government environmental and animal care standards and regulations, and specify the highest level of energy efficiency practical for all new construction projects.

52.4 Refer to article 20.5 regarding disposal of waste materials.

## 53. PERFORMANCE EVALUATION

53.1 The Contractor's performance will be evaluated by the Chief Operating Officer and/or General Manager's Representative during the Contract and at the end of the Contract. In the event that the Contractor's performance is considered unsatisfactory by the Chief Operating Officer and/or Chief Operating Officer's Representative, the Contractor and/or its affiliates may become ineligible from bidding on future contracts issued by the Board. A sample of the Contractor Performance Evaluation Form is included with this tender.



GENERAL CONTRACTOR OR SUB-CONTRACTOR

<b>Contract #:</b>	<b>Project Manager:</b>
<b>Contract Description:</b>	<b>Prime Contractor:</b>
<b>Evaluation Prepared By:</b>	<b>Contractor's Site Representative:</b>
<b>Evaluation Date:</b>	<b>Sub-Contractor:</b>

CONTRACT CO-ORDINATOR		CONTRACT INFORMATION	
Name:		Contract Award Amount	Final Amount
Telephone No.	Fax No.	Contract Award Date	Contract Completion Date
E-Mail Address:		Original Completion Date	Interim Certificate Date
		Final Completion Date	No. of Change Orders                      Amount of Change Orders

ITEM - EVALUATING CRITERIA							COMMENTS
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COMMENCEMENT OF PROJECT	Rating Value	E	AS	S	BS	P	
		4	3	2	1	0	
Commencement of work by the contractor once the contract was awarded.							

QUALITY OF WORKMANSHIP	Rating Value	E	AS	S	BS	P	
		4	3	2	1	0	
The Quality of Workmanship for incorporating materials & equipment into the work must meet the requirements set out in the contract documents (plans/specifications).							

SCHEDULE	Rating Value	E	AS	S	BS	P	
		4	3	2	1	0	
The timeline for completion in comparison to the original completion date. Allowing for circumstances/conditions beyond the contractors control.							

PROJECT MANAGEMENT	Rating Value	E	AS	S	BS	P	
		4	3	2	1	0	
How the project was managed in comparison to how it is described in the drawings and specifications. Includes co-ordination, quality control, effective schedule development and implementation.							



<b>SUB-CONTRACTOR CONTROL</b>	<b>Rating Value</b>	<b>E</b> 4	<b>AS</b> 3	<b>S</b> 2	<b>BS</b> 1	<b>P</b> 0
The ability of the General Contractor to control sub-contractors on the project. Including co-ordination, scheduling of sub-trades and extras.						

<b>HEALTH &amp; SAFETY</b>	<b>Rating Value</b>	<b>E</b> 4	<b>A</b> 3	<b>S</b> 2	<b>BS</b> 1	<b>P</b> 0
How the health & safety regulations & policies were managed and administered. Occupational Health & Safety Act, Toronto Zoo Policies, Construction Safety.						

<b>PUBLIC RELATIONS</b>	<b>Rating Value</b>	<b>E</b> 4	<b>AS</b> 3	<b>S</b> 2	<b>BS</b> 1	<b>P</b> 0
Contractors consideration for Toronto Zoo staff and members of the general public who were visitors of the Toronto Zoo.						

<b>EXTRAS / CLAIMS</b>	<b>Rating Value</b>	<b>E</b> 4	<b>AS</b> 3	<b>S</b> 2	<b>BS</b> 1	<b>P</b> 0
Requests for unreasonable extras. Sufficient supporting documentation for requested extras.						

**TOTAL POINTS FOR THIS CONTRACT**

**OVERALL RATING**

<b>(E)Excellent</b> 27-32	<b>(A) Above Standard</b> 21-26	<b>(S) Standard</b> 15-20	<b>(B) Below Standard</b> 8-14	<b>(P) Poor</b> 0 - 7
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**OVERALL COMMENTS:**

**TORONTO ZOO'S REPRESENTATIVE**

Title:	Signature
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CONTRACTOR PERFORMANCE EVALUATION SHEET

**Rating Definitions**

**EXCELLENT**                    **PERFORMANCE SIGNIFICANTLY EXCEEDS JOB EXPECTATIONS**  
(4)                                Rating for Contractors whose job performance produced exceptional results

**ABOVE STANDARD**           **PERFORMANCE CONSISTENTLY MET AND FREQUENTLY EXCEEDED JOB EXPECTATIONS**  
(3)                                Rating for Contractor whose performance usually went beyond normal requirements

**STANDARD**                    **PERFORMANCE MET JOB EXPECTATIONS**  
(2)                                Rating for Contractor whose overall performance achieved expected results

**BELOW STANDARD**           **PERFORMANCE NEEDS IMPROVEMENT TO MEET JOB EXPECTATIONS**  
(1)                                Rating for a Contractor whose results regularly failed to meet job requirements and termination of the contract is recommended

**POOR**                            **PERFORMANCE IS NOT ACCEPTABLE**  
(0)                                Rating for a Contractor whose results regularly failed to meet job requirements and termination of the contract is recommended



**SECTION IV**  
**SPECIFICATIONS**

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BID DOCUMENTS AND SPECIFICATIONS

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Project:                                    2018 Roof Rehabilitation Program At  
**MEMBER & GUEST SERVICES BUILDING**  
361A Old Finch Avenue  
Toronto, ON, M1B 5K7

Prepared for:                             Prepared For  
**TORONTO ZOO**  
361A Old Finch Avenue  
Toronto, ON, M1B 5K7

Attention:                                 Leona Mitchell, Director, Facilities & Services

W.O. Number:                             HR18-020SP  
IRC Number:                                IRC-20322

**IRC Building Sciences Group**  
2121 Argentia Road, Suite 401  
Mississauga, Ontario, L5N 2X4

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## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Barriers
- .2 Environmental Controls
- .3 Fall Arrest
- .4 Traffic Controls
- .5 Fire Routes

### **1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CGSB 1.189M – Primer, Alkyd, Wood, Exterior
  - .2 CGSB 1.59 – Alkyd Exterior Gloss Enamel
- .2 Canadian Standards Association (CSA)
  - .1 CSA O121M – Douglas Fir Plywood
- .3 Occupational Health and Safety Act and regulations for Construction Projects.
- .4 Canadian Standards Association (CSA), CSA S350-M, Code of Practice for Safety in Demolition of Structures.
- .5 Comply with National Building Code of Canada, Part 8, “Safety Measures at Construction and Demolition Sites”, and Provincial requirements.

### **1.3 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

### **1.4 WORK AREA HOARDING**

- .1 Erect temporary site enclosures where required using:
  - .1 38 x 89 mm (2" x 4") construction grade lumber framing at 600 mm (2') centres and 1200 x 2400 x 13 mm (4' x 8' x 1/2") exterior grade fir plywood to CSA O121. Apply plywood panels vertically flush and butt jointed.
  - .2 1800 mm (6') high interlocking steel fence, with openings no greater than 38 mm (1.5")
- .2 Where required provide a minimum of one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .3 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

- .4 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189M and one coat exterior paint to CAN/CGSB 1.59. Maintain public side of enclosure in clean condition.
- .5 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

## 1.5 COVERED HOARDING

- .1 Covered hoardings will be required when working over exits that serve as fire exits and locations where entrance or exit is required to remain open during work as stipulated by Owner.
- .2 Covered hoardings to be erected from vertical face of exit/entrance a minimum of:
  - .1 a line from top of work extending on 60° angle from vertical, or
  - .2 6000 mm (20') long.
- .3 Covered hoardings to be provided when work occurs overhead of following:
  - .1 Emergency exits
  - .2 Safe Areas
  - .3 Emergency access roads
  - .4 Entrances and exits determined by Owner to remain open during work
  - .5 Entrances and exits required to remain open to provide adequate egress in and out of building
- .4 Covered hoardings for pedestrian traffic to be constructed as follows:
  - .1 Scaffolding frames with X-bracing at 2400 mm (8') o/c;
  - .2 2x10 planks across top of frames tight together fastened to scaffolding frames;
  - .3 19 mm (3/4") plywood fastened to top of 2x10 planks;
  - .4 minimum 12 mm (1/2") plywood on 38 x 89 mm framing side walls set inside of overhead framing;
  - .5 provide and maintain lighting to a minimum of 50 lux, constructed in a fashion that will mitigate vandalism.
- .5 Covered hoardings for Access roads and Safe Areas to be designed by a Professional Engineer licensed in province for Place of Work under guidelines of provincial Occupational Health and Safety Act and with local authorities having jurisdiction.

## 1.6 WORKING FROM ROOF

- .1 If and when work is performed on roof, existing roof composition to be protected by following:
  - .1 minimum 25 mm (1") rigid insulation;
  - .2 6 mil polyethylene sheet, lapped at discontinuities by 300 mm (12");
  - .3 19 mm (3/4") plywood sheathing.

## 1.7 FALL ARREST

- .1 If building does not have an approved roof anchor system in place, supply an engineered rigging system signed and sealed by a Professional Engineer.
- .2 Provide rigging drawings showing location of anchors, life lines and primary suspension lines indicating following:
  - .1 Primary suspension line size.
  - .2 Life safety line size.
  - .3 Quantity and location of counter weights.
  - .4 Size and length of outrigger beam.
  - .5 Configuration of stages, whether bosuns chair, swing stage or tiered swing stage.
  - .6 Details indicating:
    - .1 proprietary beam saddles with anchorage
    - .2 compression fittings
    - .3 shackles or forged hooks
    - .4 protection of life lines
    - .5 size and quantity of cable clips
- .3 Where swing stage rigging is not used prepare plans indicating a location of life line tie offs.
- .4 Provide typical details indicating construction and anchorage for secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .5 Conform to requirements of Occupational Health and Safety Act and regulations for Construction Projects

## 1.8 WEATHER ENCLOSURES

- .1 Weather to be considered incidental to work and to not be claimed as additional.
- .2 Applicable standard to be used for materials or building components when enclosures and/or heating is required to complete work.
- .3 Provide weather tight closures for, but not limited to:
  - .1 unfinished door and window openings;
  - .2 openings in floors and roofs;
  - .3 openings through walls;
  - .4 locations where daily work is not completed in a days work and components left exposed are sensitive to weather conditions;
  - .5 protection of materials used that are sensitive to weather conditions.
- .4 Design enclosures to withstand wind pressure, snow loading etc.



### **1.9 DUST TIGHT SCREENS**

- .1 Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.
- .3 Provide means for ventilating area if work is to occur in an interior or confined space.
- .4 Ventilate work area when it corresponds with areas used by tenants or patrons concurrently for parking or egress. If dust generation will affect tenants or patrons provide sealed enclosure with adequate ventilation for health and safety of workers.

### **1.10 ACCESS TO SITE**

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 Provide all appropriate signage directing public and building occupants away from work area
- .3 Emergency exits: Maintain clear and unobstructed use of all existing exit doors and routes. This may include provision of overhead protection and enclosed exit walkways in case of overhead work. Provide adequate lighting for 24 hour use.

### **1.11 PUBLIC TRAFFIC FLOW**

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

### **1.12 FIRE ROUTES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- .2 Provide all required signage to inform emergency vehicles of temporary route for access if modified as part of work.

### **1.13 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

### **1.14 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Consultant locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**END OF SECTION - 01560**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Consideration of Substantial Performance
- .2 Review and QA Observations required for applications of Substantial Performance and Total Completion
- .3 Closeout Submittals

### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2 – 2008, Stipulated Price Contract.

### **1.3 CONSIDERATION OF SUBSTANTIAL PERFORMANCE AND COMPLETION BY CONSULTANT**

- .1 A contract will be considered substantially performed given following:
  - .1 when improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of not more than,
    - .1 3 percent of first \$500,000 of Contract Price,
    - .2 2 percent of next \$500,000 of Contract Price, and
    - .3 1 percent of balance of Contract Price.
  - .2 Where work cannot be completed expeditiously for reasons beyond control of Owner or Contractor, remaining costs will be deleted from Contract Price in determination of substantial performance.
- .2 A contract will be considered completed given following:
  - .1 when improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of lesser of,
    - .1 1 percent of Contract Price.
    - .2 \$1000.00

## **PART 2 - PRODUCTS**

### **2.1 NOT USED**

- .1 Not Used.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION AND DECLARATION**

- .1 Contractor and all Subcontractors to conduct a review of Work; identify deficiencies and defects in preparation of list for application of Substantial Performance.
- .2 Consultant will schedule date within time allowance of Contract documents for both Consultant and Contractor to perform review of Work and to confirm Work identified on submitted list.

- .3 Consultant will within time allowance of Contract documents provide a breakdown of costs associated with deficiencies and defects for Consideration of Substantial Performance.
- .4 If Work is deemed incomplete in Consideration of Substantial Performance, complete outstanding items and request additional review following same protocol.
- .5 When Contractor is satisfied that Work is completed make application for final review by Consultant. Consultant will within allowances of Contract documents perform final review of Work.
- .6 Any deficiencies and defects to be tabulated with associated costing for Consideration of Completion.
- .7 If Work is deemed incomplete by Consultant, complete outstanding items and request additional review.
- .8 Defective products will be rejected, regardless of previous review and observations. Replace products with new at no expense to Owner.

### **3.2 MAINTENANCE AND RECORD DOCUMENTS**

- .1 Following to be submitted to Owner at completion of Work:
  - .1 Maintenance manuals for, but not limited to, operating instructions, maintenance manuals, record of “as built” drawings, spare parts, maintenance of materials, special tools for completeness.
  - .2 Record of substantial and project completion correspondence inclusive, but not limited to Contractor lists, Consultant tabulations and certificates.
  - .3 Compile all shop drawings that have been submitted.

### **3.3 RECORDING ACTUAL SITE CONDITIONS**

- .1 Submit Actual Conditions as outlined in following sentences.
- .2 Record information on set of Project Specifications provided by Consultant.
- .3 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .4 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .5 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
  - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .3 Field changes of dimension and detail.
  - .4 Changes made by change orders.
  - .5 Details not on original Contract Drawings.

- .6 References to related shop drawings and modifications.
- .6 Specifications: legibly mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.

### **3.4 WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after certification of completion.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.

### **3.5 FORMAT**

- .1 Organize data in form of an instructional manual.
  - .1 Binders to be vinyl, hard covered, 3 'D' ring, loose leaf 219mm x 279mm (8.5" x11") with spine and face pockets.
  - .2 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
  - .3 Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
  - .4 Arrange content under Section numbers and sequence of Table of Contents.
  - .5 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
  - .6 Manufacturer's printed data, or typewritten data will be accepted.
  - .7 Drawings to be provided with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

### **3.6 CONTRACT CLOSE-OUT**

- .1 Expedite and complete deficiencies and defects identified by Consultants.
- .2 Submit required documentation such as statutory declarations, Workers' Compensation Certificates, warranties, certificates of approval or acceptance from regulating bodies.
- .3 Review QA Observation and testing reports to verify conformance to intent of documents and that changes, repairs or replacements have been completed.

- .4 Provide on-going review, examination and attendance to building, call-back, maintenance and repair problems during Warranty periods.
- .5 Provide warranties and bonds fully executed and notarized.
- .6 Execute transition of Performance of Labour and Materials Payment Bond to warranty period requirements.
- .7 Collect and assemble documents executed by Subcontractors, suppliers and manufacturers.

**END OF SECTION - 01775**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01560 – Temporary Barriers and Enclosures
- .2 Section 07531 – EPDM Membrane Roofing

### **1.2 REFERENCES**

- .1 Latest edition of all listed references to apply:
  - .1 Canadian Standards Association CSA S350, Code of Practice for Safety in Demolition of Structures.
  - .2 National Building Code of Canada, Part 8, “Safety Measures at Construction and Demolition Sites”, and Provincial requirements.
  - .3 Occupational Health and Safety Act and regulations for Construction Projects.
  - .4 Canadian Environmental Protection Act (CEPA).
  - .5 Canadian Environmental Assessment Act (CEAA).
  - .6 Transportation of Dangerous Goods Act (TDGA).

### **1.3 ASBESTOS AND DESIGNATED SUBSTANCES**

- .1 Demolition of spray or trowel applied asbestos can be hazardous to health. Notify Consultant if material resembling spray or trowel applied asbestos is encountered on site. Stop work and do not proceed with further removal until written instructions have been received from Consultant.
  - .1 Abatement procedures for Asbestos Containing Materials (ACM) pertinent to successful performance of Work to be paid for by Owner, preapproved by Consultant, as an extra cost to Contract.
  - .2 All ACM work to be in compliance with current provincial asbestos abatement regulations for Place of Work.

### **1.4 STORAGE AND PROTECTION**

- .1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.
- .2 In all circumstances, ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Protect trees, plants and foliage on site and adjacent properties where indicated.

### **1.5 EXISTING CONDITIONS**

- .1 Prior to start of any demolition work, remove contaminated or hazardous materials from site and dispose of at designated disposal facilities.
- .2 Record and discuss with Consultant any deviations from existing assumed conditions as indicated by drawings and/or specifications.

## **1.6 REGULATORY REQUIREMENTS**

- .1 Ensure all work is performed in compliance with CEPA, CEAA, TDGA, and all applicable provincial regulations.

## **1.7 NOTICE**

- .1 Provide a minimum twenty-four (24) hour notice to Consultant and Owner prior to proceeding with any work that may disrupt building access or services.

## **PART 2 - NOT USED**

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Examine site with Consultant and verify extent and location of items designated for removal, disposal, recycling, salvage and items to remain. Removal of HVAC units require confirmation by Owner's Representative.
- .2 Locate and protect utilities where applicable. Notify and obtain approval of utility companies before starting demolition.

### **3.2 GENERAL PROTECTION**

- .1 Prevent movement, settlement, or other damage to adjacent structures, utilities, and parts of building to remain in place. Provide engineered bracing and shoring as required.
- .2 Minimize noise, dust, and inconvenience to occupants.
- .3 Protect existing building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .5 Provide required signage, barricades, hoarding, overhead protection and temporary egress.
- .6 Support affected structure or building components and if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures and then cease operations and notify Consultant immediately.
- .7 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .8 Do not dispose of waste or volatile materials such as: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.
- .9 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .10 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
- .11 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.

- .12 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

### 3.3 DEMOLITION SALVAGE AND DISPOSAL

- .1 Remove parts of existing structure or roof system to permit repairs or new installation. Sort materials into appropriate piles for recycling and or reuse.
- .2 Carry in Base Bid Price all costs to salvage, protect from harm, and re-use following components, unless indicated otherwise elsewhere in specifications:
  - .1 Existing skylights, mechanical equipment, cladding, stairs and ladders, satellite and communications equipment, electrical lines, and service lines, etc.
- .3 Refer to drawings and specifications for items identified for reuse or salvage, if applicable.
- .4 Remove items to be reused, store in a protected location, and reinstall under appropriate section of specification.
- .5 Trim edges of partially demolished building elements to suit future use.
- .6 Include for disposal of removed materials to appropriate Landfill and/or recycling facilities, except where specified otherwise, and in accordance with authority having jurisdiction.
  - .1 Where possible, all existing recyclable materials, gravel, asphalt products, etc. to be transported to an appropriate recycling facility.
  - .2 Provide location of local facility receiving removed recyclable materials to Owner and Consultant.
- .7 Dispose of debris on a continuous basis. Do not stockpile debris in a manner which would overload structure, or impede access around site.

### 3.4 SEQUENCE OF OPERATION

- .1 Removal:
  - .1 Remove items as indicated in technical sections, including roofing ballast or gravel, metal roofing flashings, roofing membrane and flashings, roofing insulation, and or vapour retarder.
    - .1 Do not disturb items designated to remain in place.
  - .2 Restrict roofing demolition work to sections in limited size that will be restored and made watertight by end of working day.
  - .3 Use extreme caution when performing demolition work around skylights, sloped glazing, and other force and vibration sensitive roof projections.
- .2 Removal From Site:
  - .1 Interim removal of stockpiled material may be required, if it is deemed to interfere with operations of Owner.
  - .2 Do not overload existing roof structures.
- .3 Salvage:



- .1 Carefully dismantle items containing materials for salvage and stockpile salvaged materials at locations acceptable to Owner and Consultant.
- .4 Disposal of Material:
  - .1 Dispose of materials not designated for salvage or reuse on site to be hauled to an authorized disposal site and or recycling facilities.
- .5 Backfill:
  - .1 Backfill in areas as indicated.

### 3.5 ABANDONED AND UNUSED ITEMS

- .1 Items of unused and/or abandoned rooftop equipment, units, service lines, cabling, and any related supports which are not operational or in use are to be removed and disposed of.
- .2 Existing services for abandoned equipment to be dismantled to below roof deck, and closed off in accordance with local bylaws and Code requirements. Confirm all electrical lockout procedures with Owner's representative.
- .3 Existing roof deck openings to be closed using following guidelines:
  - .1 Openings up to 152mm (6") in diameter or 152x152mm (6"x6"):
    - .1 Metal Decking: Install 610x610mm (24"x24") galvanized steel plate, min. 18ga. secured with 4 screws per side to existing decking.
  - .2 Openings greater than 152mm (6") in diameter or 152x152mm (6"x6"):
    - .1 Wood Planking: Replace with SPF #1 grade boards to match existing thickness. All replacement decking shall have 3 points of bearing. Provide new framing to match original as required.
    - .2 Plywood Decking: Replace with No.1 construction grade plywood sheathing, Good One Side (G1S), to match existing thickness. All replacement decking shall have 3 points of bearing and installed in logical rectangular shapes. New plywood decking to be supported by at least half thickness of roof joist, turrs, or rafter underneath. Provide galv. H-clips to existing decking on unsupported sides.
    - .3 Steel Decking: Obtain ruling from Engineer whether decking is to be replaced or suitably overlaid with identical decking. Secure all decking with TEK screws at each lower flute bearing point structure; welding is not permitted.
    - .4 Concrete Deck: Refer to detail drawing.
  - .3 Openings greater than 915x915mm (3'x3'):
    - .1 Consult Structural Engineer for deck review and design of new framing, decking, securement, and any other required support.

### 3.6 DECK REPAIRS

- .1 Wood Decking: Areas of deteriorated wood planking or plywood decking to be cut out and replaced with new to match existing.

- .2 Metal Decking: Areas of corroded steel decking not requiring replacement to be cleaned using a wire brush to completely remove all evidence of corrosion. Remove all dust and coat with zinc rich epoxy primer to completely cover all areas where corrosion was evident.
- .3 Concrete Decking: Areas of concrete decking with pitted or deteriorated surfaces to be cleaned sufficiently to receive repair material. Repairs to be completed with quick set masonry repair grout trowelled to a smooth even finish, flush with surrounding areas.

### **3.7 RESTORATION**

- .1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.
- .2 Use only soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

### **3.8 CLEANUP**

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Use only cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

**END OF SECTION - 02225**

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## **PART 1 - GENERAL**

### **1.1 SCOPE OF WORK**

- .1 Where existing steel deck is exposed during roof removal and demolition in preparation for installation of a new roof system, exposed steel deck to be examined for any corrosion and deterioration that may impact integrity of new roof system.
- .2 At completion of each day's demolition phase, review existing roof deck condition on all exposed areas with Consultant to determine level of existing steel deck corrosion and corrective action required on various areas.
- .3 Remove or repair varying degrees of corrosion identified with Consultant in accordance with severity of corrosion found:
  - .1 Areas With No Corrosion: Clean and sweep exposed deck.
  - .2 Areas With Light to Moderate Corrosion: Where pitting of base metal does not exceeding 35% of deck thickness, clean, sweep, prep, and install rust inhibiting primer and paint.
  - .3 Areas with Severe Corrosion:
    - .1 On Small Areas: Clean, sweep, install rust inhibiting primer and paint, and overlay section with new metal decking.
    - .2 On Large Areas: Cut out bad sections and install new metal decking. Engineered shop drawings are required for attachment type and loading.
- .4 Photograph and/or collect coupon samples as a basis for corrective actions performed. Provide copies and samples to Consultant where requested.
- .5 Document and chart location of deck repairs and type of repair performed in relation to roof plan. Provide roof map or diagram for deck repair and location to Consultant when requested.

### **1.2 REFERENCE STANDARDS**

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
  - .1 American Society for Testing and Materials (ASTM) International:
    - .1 C726: Mineral Fibre Roof Insulation Board.
    - .2 A606: Steel, Sheet & Strip, High-Strength, Low-Alloy, Hot-Rolled & Cold-Rolled.
    - .3 A653M: Steel Sheet, Zinc-Coated or Zinc-Iron Alloy-Coated by Hot-Dip Process.
    - .4 A792M: Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by Hot-Dip Process.
  - .2 Canadian Standards Association (CAN/CSA):
    - .1 S16: Limit States Design of Steel Structures.
    - .2 S136: North American Design of Cold Formed Steel Structural Members.
    - .3 W47.1: Certification of Companies for Fusion Welding of Steel Structures.
  - .3 Canadian Sheet Steel Building Institute (CSSBI): Standard for Steel Roof Deck 10M
  - .4 Steel Structures Painting Council (SSPC): Surface Preparation Standards
  - .5 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

### 1.3 SHOP DRAWINGS

- .1 Submit shop drawings where required for review, in accordance with Submittals - Section 01330.
- .2 Shop drawings to outline and indicate:
  - .1 Material types, core thickness, and finishes,
  - .2 Connections, lap lengths, and joint types,
  - .3 Method of anchorage and securement,
  - .4 Number, type, and location of fasteners,
  - .5 Support sizing, spacing, and reinforcement,
  - .6 Any related accessories.
- .3 Only shop drawings bearing review stamps to be kept at work site.
- .4 Reviews of Shop Drawings are for general conformance with design concept and general compliance with information given in contract documents. Contractor responsible for confirming, and correlating all quantities and dimensions. Review does not relieve Contractor's responsibility for compliance with intent of drawings and specifications or for accuracy of work.

### 1.4 PROTECTION

- .1 Provide adequate protection to allow for normal operations of facility to continue during performance of work.
- .2 Protect all openings and safeguard all vents, stacks, and roof drains from adverse weather, debris, and any contamination from deck rehabilitation work.
- .3 Proceed with caution, especially around deck openings or at suspected weakened sections of existing roof deck. Employ warning signs, barriers, and/or temporary railings as warranted by existing conditions.
- .4 Use equipment and methods that will not impair performance of roof deck. Any damage by Contractor, or any of his workforce, to be repaired with new materials to restore items to their original condition at no additional cost to Owner.

### 1.5 STORAGE

- .1 Provide adequate storage and protection from elements for hazardous materials at both ground and roof levels.
- .2 Bring to roof only enough new material as may be required for deck rehabilitation work that day.
- .3 Hazardous materials to be stored in a secure location away from public access at ground level at end of each work day.
- .4 Protect steel roof deck during fabrication, transportation, site storage and erection, in accordance with CSSBI Standard 10M.

### 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials where possible and as required by local, provincial, and national regulations. Include in Bid Price for all tipping fees associated with landfills and recycling depots.
- .2 Fold up metal banding, flatten, and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Steel Roof Decking:
  - .1 Fabricated from ASTM 653M SS Grade 230 with a Z275 galvanized zinc coating. Nominal steel core thickness to be a minimum 1.2 mm (3/64”).
  - .2 Cold rolled metal decking with profile to match existing steel deck. Minimum thickness to be 22 gauge for a two span condition.
  - .3 Where required, sections will have provisions for interlocking side joints.
- .2 Flat Sheet Steel:
  - .1 Fabricated from ASTM 653M SS Grade 230 with a Z275 galvanized zinc coating. Nominal steel core thickness to be a minimum 1.2 mm (3/64”).
  - .2 Flat sheet steel with minimum 22 gauge thickness.
  - .3 Where required, sections will have provisions for interlocking side joints.
- .3 Sheet and Decking accessories:
  - .1 Welding materials: To CSA W59-1984.
  - .2 Galvanizing: Hot dipped galvanizing with zinc coating 600g/m2 to CSA G164-M1981.
  - .3 Zinc Touch-up Coating: Zinc-rich, cold applied galvanizing coating; Galvafruid by W.R. Meadows or IRC Group approved equivalent.
- .4 Fasteners: Meeting Factory Mutual 4470 Standard for wind uplift and corrosion resistance:
  - .1 Screws at Deck Top Flutes:
    - .1 16mm (5/8”) to 32mm (1.25”) long, stainless steel, #14 self tapping AB screws with flat pan head.
  - .2 Screws at Deck Bottom Flutes:
    - .1 16mm (5/8”) to 32mm (1.25”) long, stainless steel, #14 self tapping AB screws with hex washer head.
    - .2 16mm (5/8”) to 32mm (1.25”) long, carbon steel, #10-16 TEK Screws with self tapping drill point and hex washer head
  - .3 Deck Fastening Pins: 4mm (3/16”) diameter shank, galvanized X-EDNK or X-EDN drive pins by Hilti for HSN deck fastening system.
  - .4 Bolts and Anchor Bolts: Galvanized carbon steel or stainless steel to ASTM A307-84a.
- .5 Rust Inhibiting Primer and Finish Coat:
  - .1 Two Component Epoxy Coating:
    - .1 Rust Inhibitor base coat: Amercoat 370, fast drying, self priming, multi-purpose two component epoxy coating by Ameron International and distributed by Amercoat Canada.

- .2 Rust Inhibitor finish coat: Amercoat 370, fast drying, self priming, multi-purpose two component epoxy coating by Ameron International and distributed by Amercoat Canada.
- .2 Alkyd Primer and Finish Coating:
  - .1 Apply one primer coat to prepared metal roof deck areas:
    - .1 Kem-Kromik Rust Inhibitive Metal Primer (B50WZ1) by Sherwin Williams,
    - .2 Glid-Guard Metal Primer 4570 by Glidden,
    - .3 or IRC Group approved equal to above.
  - .2 Apply two finish coats to exposed deck area after primer is dry:
    - .1 Industrial Enamel (B54W101) by Sherwin Williams,
    - .2 Glid-Guard Alkyd Industrial Enamel 4550 by Glidden,
    - .3 or IRC Group approved equal to above.

**2.2 FABRICATION**

- .1 Fabricate new steel deck to match thickness and profile of existing deck.
- .2 Fabricate items from steel unless otherwise noted.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Do all welding work in accordance with CSA W59-1984 unless specified otherwise.
- .5 When welding, use puddle welds with a diameter of 22mm (7/8") to attach new metal decking.
- .6 Provide corrosion protection and seal to exterior steel fabrications in accordance with CAN3-S16.1-M84.

**PART 3 - EXECUTION**

**3.1 DETERMINE LEVEL OF CORROSION:**

- .1 On All Exposed Metal Roof Deck Areas: Review and examine surface of exposed metal roof deck with Consultant to determine level of deck corrosion and corresponding corrective action required. Consult licensed Structural Engineer as required and include any related costs in Bid Price. Refer to Table 1 – Measuring Metal Thickness below for extent of corrosion.
  - .1 Do not use flat faced micrometer. Use needle point micrometer only, measuring at a typical pit. For painted or primed decking, clean all coating from deck prior to measuring thickness.
- .2 Table 1 – Measuring Metal Thickness:

1	2	3	4
Gauge No.	Uncoated, Minimum Thickness, Inches	Galvanized Thickness, Inches	Maximum allowable Depth of Pitting, 35% of Uncoated Metal Thickness
24	0.0239	0.0276	0.008 (8 mils)
22	0.0295	0.0336	0.010 (10 mils)
20	0.0358	0.0396	0.013 (13 mils)
18	0.0474	0.0516	0.017 (17 mils)

- .1 Note: Thicknesses in Column 2 are based on industry values.
- .2 Note: Values in Column 4 are measured from top surface of uncoated sheet. Clean paint, primer, and galvanizing for measurements.

### 3.2 LEVEL 1: NO VISIBLE CORROSION

- .1 No damage found to base metal or damage to deck coating.
- .2 Deck Surface Cleaning:
  - .1 Broom clean. Vacuum and/or wipe with clean cloths all flanges, webs, and ribs clear of all dust and debris.
  - .2 Do not use compressed air. Use leaf-type blowers only with approval of Consultant.
  - .3 Remove all loose dirt, debris, moisture, oil, grease, loose mill scale, welding slag, or other contaminants from surface.



**Photo of Level 1: No Visible Corrosion**



### 3.3 LEVEL 2: LIGHT TO MODERATE CORROSION

- .1 Surface of coating is sporadically damaged but there is no pitting or deterioration of base metal. In areas where decking is lightly to moderately corroded, but determined to be adequate to support design loads, sweep deck clean, prime, and paint with a two coat application:
  - .1 Light Corrosion: Freckled corrosion.
  - .2 Moderate Corrosion: Coating no more than 50% damaged with pitting of base metal not exceeding 35% of deck thickness as indicated in Table 1 – Measuring Metal Thickness.
  - .3 Areas without corrosion do not require primer and coating application.
- .2 Deck Surface Cleaning:
  - .1 Broom clean. Vacuum and/or wipe with clean cloths all flanges, webs, and ribs clear of all dust and debris.
  - .2 Do not use compressed air. Use leaf-type blowers only with approval of Consultant.
- .3 Deck Preparation and Sanding:
  - .1 All surfaces (top and bottom of roof deck) are to be cleaned using hand tools to SSPC-SP-2 surface preparation standard.
  - .2 Remove all loose corrosion, dirt, moisture, oil, grease, loose mill scale, welding slag, or other contaminants from surface that may inhibit bond of new coating.
  - .3 Remove loose rust, paint, rust scale, and mill scale, etc. by wire brushing or hand sanding. Tight corrosion (corrosion not removed by above methods) and corrosion bloom may remain.
  - .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil, and solvents before primer coat is applied and between applications of remaining coats. Apply primer or paint as soon as possible after cleaning and before further deterioration occurs.
- .4 Deck Primer Application:
  - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces to original condition at no additional cost to Owner.
  - .2 Plug small holes in deck before primer and coating application. Where possible, plug holes from underside of decking. Pack openings and gaps at projections and perimeters with batt or spray urethane foam insulation to minimize seepage of primer, coatings, and related fumes into building.
  - .3 Review service preparation with Consultant before start of primer application. Do not apply coatings when surface or ambient air temperature falls below 5°C (41°F).
  - .4 Mix two component epoxy coatings or thoroughly mix rust inhibiting primer as per Manufacturer's written instructions. Periodically mix contents of coatings during application to avoid settlement.
  - .5 Do not thin coating mixtures unless otherwise approved by Manufacturer and Consultant.
  - .6 Apply over prepared areas, self priming epoxy base coat to a dry thickness of 3 mils or rust inhibiting metal primer applied at a rate of 8m<sup>2</sup>/litre (330 ft<sup>2</sup>/gallon).

- .7 Apply coating by brush, roller, or airless sprayer to Manufacturer's instructions.
- .5 Deck Coating Application:
  - .1 Do not apply coatings when surface or ambient air temperature falls below 5°C (41°F).
  - .2 Sand and dust between coats where required by manufacturer to provide adequate adhesion for next coat and to remove visible defects.
  - .3 Mix two component epoxy coatings or thoroughly mix rust inhibiting coating to Manufacturer's instructions. Periodically mix contents of coatings to avoid settlement.
  - .4 Do not thin coating mixtures unless otherwise approved by Manufacturer and Consultant.
  - .5 Apply over epoxy base coat/primed areas, a single epoxy finish coat to a dry thickness of 5 mils or two coats of rust inhibiting metal coating applied at a rate of 8m<sup>2</sup>/litre (330 ft<sup>2</sup>/gallon) per coat.
  - .6 Apply coating by brush, roller, or airless sprayer to Manufacturer's instructions.
  - .7 Allow sufficient time for drying between coats. Dry timing affected by current weather conditions. Refer to Manufacturer's written instructions.
  - .8 Allow finish coating to dry-to-touch prior to allowing traffic or vapour retarder installation.



**Photo of Level 2: Light to Moderate Corrosion**

### 3.4 LEVEL 3: SEVERE CORROSION, NO HOLES OR PENETRATIONS

- .1 Areas with damage to more than 50% of surface coating and with base metal pitting greater than 35% of deck thickness, as indicated in Table 1, but with no holes or full penetration corrosion:
  - .1 In areas where decking is severely corroded, but determined to be adequate to support design loads, sweep deck clean, prime, paint with a two coat application, and install new metal deck overlay over existing.
- .2 Deck Surface Cleaning:
  - .1 Broom clean. Vacuum and/or wipe with clean cloths all flanges, webs, and ribs clear of all dust and debris.
  - .2 Do not use compressed air. Use leaf-type blowers only with approval of Consultant.
- .3 Deck Preparation and Sanding:
  - .1 All surfaces (top and bottom of roof deck) are to be cleaned using hand tools to SSPC-SP-2 surface preparation standard.
  - .2 Remove all loose corrosion, dirt, moisture, oil, grease, loose mill scale, welding slag, or other contaminants from surface that may inhibit bond of new coating.
  - .3 Remove loose rust, paint, rust scale, and mill scale, etc. by wire brushing or hand sanding. Tight corrosion (corrosion not removed by above methods) and corrosion bloom may remain.
  - .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil, and solvents before primer coat is applied and between applications of remaining coats. Apply primer or paint as soon as possible after cleaning and before further deterioration occurs.
- .4 Deck Primer Application:
  - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces to original condition at no additional cost to Owner.
  - .2 Plug small holes in deck before primer and coating application. Where possible, plug holes from underside of decking..
  - .3 Pack openings and gaps at projections and perimeters with batt or spray urethane foam insulation to minimize seepage of primer, coatings, and any related fumes into building interior.
  - .4 Do not begin application of primer until surface preparation has been reviewed with Consultant.
  - .5 Do not apply new coatings when deck surface or ambient air temperature falls below 5°C (41°F).
  - .6 Mix two component epoxy coatings or thoroughly mix rust inhibiting primer as per Manufacturer's written instructions. Periodically mix contents of coatings during application to avoid settlement.
  - .7 Do not thin coating mixtures unless otherwise approved by Manufacturer and Consultant.

- .8 Apply over prepared areas, self priming epoxy base coat to a dry thickness of 3 mils or rust inhibiting metal primer applied at a rate of 8m<sup>2</sup>/litre (330 ft<sup>2</sup>/gallon).
- .9 Apply coating by brush, roller, or airless sprayer conforming to Manufacturer's application instructions.
- .5 Deck Coating Application:
  - .1 Do not apply coatings when surface or ambient air temperature falls below 5°C (41°F).
  - .2 Sand and dust between coats where required by manufacturer to provide adequate adhesion for next coat and to remove visible defects.
  - .3 Mix two component epoxy coatings or thoroughly mix rust inhibiting coating as per Manufacturer's written instructions. Periodically mix contents of coatings during application to avoid settlement.
  - .4 Do not thin coating mixtures unless otherwise approved by Manufacturer and Consultant.
  - .5 Apply over epoxy base coat/primed areas, a single epoxy finish coat to a dry thickness of 5 mils or two coats of rust inhibiting metal coating applied at a rate of 8m<sup>2</sup>/litre (330 ft<sup>2</sup>/gallon) per coat.
  - .6 Apply coating by brush, roller, or airless sprayer conforming to Manufacturer's application instructions.
  - .7 Allow sufficient time for drying between coats. Dry timing affected by current weather conditions. Refer to Manufacturer's written instructions.
  - .8 Allow finish coating to dry-to-touch prior to allowing traffic, or vapour retarder installation.
- .6 New Steel Deck Overlay:
  - .1 Overlay existing metal deck with new steel decking. On smaller corroded areas use a minimum of 2-span condition. Larger corroded areas to require continuous 3-span overlay condition.
    - .1 New steel deck is to be free of dirt, scale or foreign matter prior to installation. At discretion of Consultant, damaged or substandard roof deck sections are to be removed from site and replaced with new at no additional cost to Owner.
  - .2 Contractor to verify configuration, coverage, and span of metal decking. Submit engineered and stamped shop drawings for review prior to ordering materials.
  - .3 Overlay section of new galvanized steel decking over existing corroded deck with matching profile and depth. Overlay decking must bear on support steel for a minimum of 76mm (3.0").
    - .1 On Wide Rib Metal Deck: Use min. 22 gauge intermediate rib, primed deck for 3-span condition and use min. 20 gauge for less than 3-span overlay.
    - .2 On Intermediate Rib Metal Deck: Use min. 22 gauge narrow rib, primed deck for 3-span condition and use min. 20 gauge for less than 3-span overlay.
    - .3 On Narrow Rib Deck: Do not overlay narrow rib deck. Proceed to deck replacement as outlined and specified in Level 4 – Severe Corrosion With Holes.
  - .4 Place steel deck sections in final position and confirm minimum bearing on the structural supports prior to securing or fastening in place.

- .5 All new sections of decking to be mechanically attached to each supporting steel joist or beam underneath with self drilling TEK screws or Hilti fastening pin system at each flute.
  - .1 Install deck fasteners transverse to deck run, in bottom flutes of deck at a minimum of four (4) per 915mm (36") wide deck unit. Install pan head screws at top flutes of deck as required to ensure snug fit of overlay decking into existing and to eliminate gaps and lifting at edges of overlay.
  - .2 Install deck fasteners longitudinal to deck run, in bottom flutes of deck at every intersection with supporting structural members beneath.
  - .3 Ensure new steel roof deck units are adequately fastened to structural supports. Maximum spacing of fasteners along bearing supports will be lesser of: 400 mm (16") or two deck flute spacings.
  - .4 All decking side laps to be mechanically attached with self drilling TEK screws at quarter points (i.e. three between joists). Side laps of adjacent units to be fastened at intervals not greater than 915 mm (36").
- .6 Once new decking has been secured in place, all cut and exposed metal edges are to be field coated with a zinc-rich coating.



**Photo of Level 3: Severe Corrosion, No Holes, or Penetrations**

### 3.5 LEVEL 4: SEVERE CORROSION WITH HOLES

- .1 Areas with existing steel deck that is severely corroded, deteriorated, pitted, and otherwise damaged with holes and penetrations through entire deck thickness.
  - .1 In areas where decking has corroded damage as described above, and is determined to be unsatisfactory and inadequate to support design loads for installation of new roof, sections of existing roof deck are to be removed and replaced with new materials to match existing profile.
    - .1 Small corroded holes and penetrations may be overlaid with new metal decking or flat sheet plate after cleaning, priming, and coating of area underneath.
    - .2 Large areas require complete deck removal back to structural joists and framing and installation of new decking. Provide engineered shop drawings to determine design, attachment, and loading requirements.
- .2 Deck Removal and Preparation:
  - .1 Provide adequate interior protection over working areas to catch falling dirt and debris. Co-ordinate required work with Owner and Building Representative.
  - .2 Clear off all loose material, dirt, and debris from top surface of deck to reduce or prevent debris from falling into building interior during deck demolish.
  - .3 Saw-cut deck at joists using a reciprocal saw, nibbler, or other technique preapproved by Consultant. No gas cutting or abrasive cut-off saws are permitted.
  - .4 Shear welds or deck-to-joist screws where required for deck removal.
  - .5 During deck removal of corroded sections, no existing metal roof deck is to be left in a single span condition. Remove remaining section of existing metal deck and install new decking in a multi-span condition.
  - .6 Prior to removal, vacuum all flanges, webs, and ribs to clear off any cutting dust or debris.
  - .7 Carefully remove deck sections from above.
  - .8 Vacuum top surface of suspended ceiling, if present, and remove all demolition debris prior to installing new decking.
- .3 New Steel Deck Installation:
  - .1 Where required in new engineered design, reinforce underside of metal deck opening with new steel angles and framing members.
  - .2 Installing new steel roof deck with matching profile to restore integrity and continuity of roof deck to original condition.
  - .3 Deck replacement at single span conditions will require installation of heavier gauge decking. Use new 16 or 18 gauge steel decking in accordance with printed data sheets from Manufacturer of original deck.
  - .4 Erect all metal work square, plumb, straight and true, accurately fitted, with tight joints and intersections.
  - .5 All new sections of steel decking to be mechanically attached to each supporting steel joist or beam underneath at each flute. New metal deck sections may be installed by welding or mechanically attaching using Hilti deck fastening system or self drilling screws.

- .1 Steel roof deck units to be adequately fastened to structural supports. Maximum spacing of fasteners along bearing supports will be lesser of: 400 mm (16") or two flute spacings.
- .2 Where welding is specified, arc spot welds to have a 20 mm (3/4") nominal top diameter. Steel deck welder must be certified under CSA W47.1 for fusion welding of steel roof decks.
- .3 Install deck fasteners longitudinal to deck run, in bottom flutes of deck at every intersection with supporting structural members beneath.
- .4 Apply Button Punch fastening or stitch screws along side lap connections of new metal decking with original decking at a maximum spacing of 305mm (12") o.c.
- .6 Once new decking has been secured in place, touch up welds as required on top surface of steel roof deck with a compatible zinc-rich primer.
- .7 Field apply zinc-rich coating to all cut and exposed metal edges.



**Photo of Level 4: Severe Corrosion With Holes**

### **3.6 CLEAN UP**

- .1 Clean up any accidental spills and leaks immediately. Follow with Manufacturer's written instructions for clean up and disposal.
- .2 Perform daily and final clean-up of work area and areas surrounding site. Remove all debris from roof and site daily, and dispose of to suitable location for construction waste.

**END OF SECTION - 05013**



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## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01560 – Temporary Barriers and Enclosures
- .2 Section 02225 – Selective Demolition and Removal
- .3 Section 07531 – EPDM Membrane Roofing
- .4 Section 07620 – Prefinished Sheet Metal Flashing and Trim

### **1.2 REFERENCES**

Latest edition of listed references apply; most stringent requirement to govern in case of conflict.

- .1 American Lumber Standards Committee (ALSC):
  - .1 Softwood Lumber Standards.
- .2 American Society for Testing and Materials (ASTM) International:
  - .1 A153M-16a: Standard Specification for Zinc Coating (Hot-Dip) on Iron & Steel Hardware.
  - .2 A653M-15e1: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
  - .3 D1760-01: Standard Specification for Pressure Treatment of Timber Products.
- .3 American Wood-Protection Association (AWPA):
  - .1 AWPA E12: Standard Method of Determining Corrosion of Metal in Contact with Wood.
  - .2 AWPA M4: Standard for the Care of Preservative Treated Wood Products.
  - .3 AWPA P5: Standard for Waterborne Preservatives.
  - .4 AWPA P26: Standard for Alkaline Copper Quat Type A (ACQ-A).
  - .5 AWPA P27: Standard for Alkaline Copper Quat Type B (ACQ-B).
  - .6 AWPA P28: Standard for Alkaline Copper Quat Type C (ACQ-C).
  - .7 AWPA P29: Standard for Alkaline Copper Quat Type D (ACQ-D).
  - .8 AWPA U1: Use Category System: User Specification for Treated Wood.
- .4 Canadian Standards Association (CAN/CSA):
  - .1 B111-1974 (R2003): Wire Nails, Spikes and Staples.
  - .2 G164-M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 O121-17: Douglas Fir Plywood.
  - .4 O141-05 (R2014): Softwood Lumber.
  - .5 O151-17: Canadian Softwood Plywood.
  - .6 O325-16: Construction Sheathing.
- .5 Engineered Wood Association (EWA); formerly American Plywood Association (APA):
  - .1 Product Guide: Grades and Specifications.
- .6 National Forest Products Association (NFPA):
  - .1 Grading Rules.
- .7 National Lumber Grades Authority (NLGA):
  - .1 Standard Grading Rules for Canadian Lumber (2014).

### 1.3 QUALITY ASSURANCE

- .1 Lumber identification to be by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification to be by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification to be by grademark in accordance with applicable CSA standards.
- .4 At all times during Work, Contractor will have on site a qualified project supervisor. It will be Supervisor's responsibility to ensure that Work is carried out in an efficient manner, according to Plans and Specifications.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Protect lumber and other products from dampness both during and after delivery at site.
- .2 Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- .3 Stack plywood and other board products so as to prevent warping.
- .4 Locate stacks on well drained areas, supported at least 152mm (6") above grade and cover with well ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

### 1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Set aside damaged wood and dimensional lumber off-cuts for acceptable alternative uses (e.g. bracing, blocking, cripples, bridging, finger-joining, or ties). Store this separated reusable wood waste convenient to cutting station and area of work.
- .2 Separate and recycle waste materials in accordance with applicable local, provincial and national regulations. Include for tipping fees associated with landfills and recycling depots
- .3 Unused preservatives and fire retardant materials are to be diverted from landfill through disposal at a special wastes depot.
- .4 Do not burn scrap at project site.
- .5 Fold up metal banding, flatten, and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 LUMBER MATERIALS

- .1 Materials to be best merchantable lumber, straight and sized and shaped to correct dimensions from nominal sizes noted on drawings. Lumber to be selected from well seasoned stock, free from loose resinous knots, shakes, waxed edges, splits, dry rot or other defects which would impair strength or durability.
- .2 Lumber in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 Unless specified otherwise all framing members to be No.1/No.2 SPF.

- .4 All materials directly exposed to exterior to be pressure treated unless noted otherwise on drawings or elsewhere in specification.
- .5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers to be pressure treated where exposed to exterior elements.
- .6 Moisture Content:
  - .1 At time of delivery and maintained at site.
  - .2 Boards and lumber 51mm (2") and less in thickness: 19% or less.
  - .3 Lumber over 51mm (2") thick: 25% or less.
- .7 Preservative Treatment:
  - .1 All wood exposed to exterior environmental conditions, in contact with concrete or masonry to be treated with roof preservative.
  - .2 Do not treat Heart Redwood and Western Red Cedar.
  - .3 Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 610mm (24") from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.
  - .4 Treat other members specified as preservative treated (PT).
  - .5 Preservative treatment by pressure method to ASTM D1760; except any process involving use of prohibited Chromated Copper Arsenate (CCA).

## 2.2 PANEL MATERIALS

- .1 Douglas fir plywood (DFP): to CSA O121, standard construction, Good one side (G1S) when in contact with roofing membrane.
- .2 Canadian softwood plywood (CSP): to CSA O151, standard construction, Good one side (G1S) when in contact with roofing membrane.
- .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O323.

## 2.3 ACCESSORIES

- .1 Bent metal plate: 18ga or 22ga, galvanized metal sheet, formed as required or as indicated on drawings to provide support for wood blocking or roof assembly components.
- .2 Anchorage to hollow masonry and gypsum walls: Galvanized toggle bolts.
- .3 Anchorage to solid masonry or concrete: Expansion shields and lag bolts:
  - .1 Rawl mushroom head lead anchors, min 6mm (0.25") diameter for sheathing,
  - .2 Hilti Kwik-Bolts for structural members.
- .4 Anchorage of wood members to sheet steel studs: Corrosion coated screws, min #14 thread, of length to penetrate minimum 19mm (0.75") through material into base.
- .5 Nails: Minimum 6d, hot dip galvanized spiral or ring shank nails, length to penetrate through material 38mm (1.5") into base.

- .6 Anchorage of wood blocking to masonry: Masonry screws, Tapcon anchors of sufficient length to penetrate 32mm (1.25”) into masonry surfaces.
- .7 Batt Insulation: Stone wool mineral fiber batt insulation, Rockwool by Roxul Inc.
- .8 Explosive actuated fastening devices are prohibited for use on this project.

## 2.4 ACCESSORY FINISHES

- .1 Galvanizing: to CAN/CSA-G164:
  - .1 galvanized fasteners for all exterior work unless otherwise specified
  - .2 galvanized fasteners for all high interior humid areas unless otherwise specified
- .2 Use stainless steel type 304 where noted on drawings

## PART 3 - EXECUTION

### 3.1 PREPARATION

- .1 Comply with safety regulations and applicable bylaws governing work included in this section. Provide and maintain necessary barriers, guards and rails.
- .2 Scope of work includes parapet wall, roof joint, and wall modifications as indicated on drawings or as required to provide a secure, smooth surface to receive the new roof and flashing assembly:
  - .1 Install wood blocking secured into existing surfaces adequately to resist movement and wind uplift forces as per FMG 1-49, minimum 200 pounds/foot.
  - .2 Install mineral fiber insulation at all voids and as indicated on drawings.
  - .3 Install plywood sheathing to drawings.
- .3 Complete wood blocking and sheathing to walls, curbs and drains as indicated on drawings.

### 3.2 SITE APPLIED WOOD TREATMENTS

- .1 Treat only wood blocking which will remain exposed to the elements.
- .2 Treat ends of site cut surfaces of materials delivered to site with wood preservative.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

### 3.3 INSTALLATION

- .1 Comply with requirements of Provincial Building Code at Place of Work, supplemented by following paragraphs:
  - .1 Ensure continuity and completeness of vapour retarder membrane as coinciding with new wood blocking installation.
  - .2 Provide mineral wool insulation to fill voids at roof deck level or as otherwise required or indicated on detail drawings.
  - .3 Install furring and blocking as required to space-out and support new walls, window projections and louver extensions, fascia, soffit, siding and other work as required.
  - .4 Align and plumb faces of furring and blocking to tolerance of 1:600.

- .5 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .6 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure with adequate fasteners.
- .7 Install sleepers as indicated.

### **3.4 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

**END OF SECTION - 06101**

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## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

- .1 Installation of a new roof membrane over prepared substrate, including but not limited to:
  - .1 On Roof Area 2.5:
    - .1 Existing concrete roof deck,
    - .2 1 ply modified bitumen vapour retarder and flashings, self adhered,
    - .3 51mm (2.0") polyisocyanurate insulation, loose laid,
    - .4 1.5mm (60 mil) thick, Non-reinforced EPDM field membrane, ballasted,
    - .5 1.5mm (60 mil) thick, Non-reinforced EPDM membrane flashings, fully adhered,
    - .6 Round stone ballast, loose laid,
    - .7 Prefinished metal flashings and trim.
  - .2 On Roof Area 2.6:
    - .1 Existing metal roof deck,
    - .2 Existing 1 ply Kraft Paper vapour retarder,
    - .3 Existing 38mm (1.5") fibreglass insulation,
    - .4 Existing 4 ply asphalt B.U.R. membrane,
    - .5 13mm (0.5") siliconized roof cover board, in ribbons of adhesive,
    - .6 1.5mm (60 mil) thick, Non-reinforced EPDM field membrane, fully adhered,
    - .7 1.5mm (60 mil) thick, Non-reinforced EPDM membrane flashings, fully adhered,
    - .8 Prefinished metal flashings and trim.
  - .3 On Roof Area 2.7:
    - .1 Existing wood plank roof deck,
    - .2 Existing 1 ply Kraft Paper vapour retarder,
    - .3 Existing 13mm (0.5") Fibreboard insulation,
    - .4 Existing 4 ply asphalt B.U.R. membrane
    - .5 13mm (0.5") siliconized roof cover board, mechanically fastened,
    - .6 1.5mm (60 mil) thick, Non-reinforced EPDM field membrane, fully adhered,
    - .7 1.5mm (60 mil) thick, Non-reinforced EPDM membrane flashings, fully adhered,
    - .8 Prefinished metal flashings and trim.
- .2 Perform miscellaneous roof repairs as listed below and as directed on site by Observer. Repair Work to include, but not be limited to:
  - .1 On Roof Area 2.8:
    - .1 Debris:
      - .1 Remove and dispose of dirt, debris, and garbage from roof area, scupper drains, rain gutters, and downspouts.
      - .2 Sweep or vacuum accumulated debris from roof area.
    - .2 Rain Gutters & Downspouts:
      - .1 Ensure all rain gutters and downspouts are clear of debris, unobstructed, and free flowing.
      - .2 Replace missing or damaged gutter straps, brackets, and downspout hangers with new to match existing.



- .3 Replace missing or damaged gutter and downspout fasteners with new.
- .4 Replace missing or damaged sections of existing gutters or downpipes with new to match existing.
- .5 Ensure downpipes have min. 610mm (2'-0") kick-outs away from building at grade level.
- .3 New Sealant:
  - .1 Install new sealant where directed using Section 07920 as a guideline.
  - .2 Remove and dispose of existing sealant before new sealant application.

## 1.2 RELATED SECTIONS

- .1 Section 02225 – Selective Demolition & Removal
- .2 Section 07620 – Sheet Metal Flashing & Trim
- .3 Section 07920 – Joint Sealants

## 1.3 REFERENCES

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
  - .1 American Society for Testing and Materials (ASTM) International:
    - .1 C578: Rigid, Cellular Polystyrene Thermal Insulation.
    - .2 C726: Mineral Fibre Roof Insulation Board.
    - .3 C1177(M): Standard Specification for Glass Mat Gypsum Substrate.
    - .4 C1289: Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
    - .5 C1396(M): Standard Specification for Gypsum Board.
    - .6 D41: Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
    - .7 D312: Asphalt Used in Roofing.
    - .8 D2822: Asphalt Roof Cement.
    - .9 D4601: Standard for Asphalt Coated Glass Fibre Base Sheet Used in Roofing.
    - .10 D6162: SBS Mod. Bit. Sheets Using Polyester & Glass Fiber Reinforcements.
  - .2 Canadian Standards Association (CAN/CSA):
    - .1 A123.2: Asphalt Coated Roofing Sheets.
    - .2 A123.16: Asphalt Coated Glass Base Sheets.
    - .3 A231.1: Precast Concrete Paving Slabs.
    - .4 0121M: Douglas Fir Plywood.
    - .5 0151M: Canadian Softwood Plywood.
  - .3 Canadian General Standards Board (CAN/CGSB):
    - .1 37.29M: Rubber-Asphalt Sealing Compound.
    - .2 37-GP-9M: Primer, Asphalt, unfilled, for Asphalt Roofing and Waterproofing.
    - .3 37-GP-15M: Application of Asphalt Primer for Asphalt Roofing & Waterproofing.
    - .4 37-GP-56M: Membrane, Bituminous, Prefabricated and Reinforced for Roofing.
    - .5 51.26M: Thermal Insulation, Urethane and Isocyanurate, Boards, Faced.
    - .6 51.33M: Vapour Barrier Sheet, Excluding Polyethylene, for use in Construction.
  - .4 Underwriters Laboratories of Canada (CAN/ULC):
    - .1 S701: Thermal Insulation, Polystyrene, Boards and Pipe Covering.

- .2 S704: Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Fixed.
- .5 Ontario Industrial Roofing Contractors Association (OIRCA): Roofing Manual.
- .6 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

#### 1.4 SUBMITTALS

- .1 Provide with Bid Submission for Roof Work:
  - .1 Certificate of Insurance for ten million (\$10,000,000<sup>00</sup>) in Liability,
  - .2 WSIB CAD-7 Report & Clearance Letter,
  - .3 Sample copy of Manufacturer's Labour, Material, and Workmanship Warranty,
  - .4 Sample copy of Contractor's Warranty.
- .2 Provide to Quality Assurance Observer, within five (5) working days after Notice of Award:
  - .1 Initial project work schedule showing anticipated progress stages and final completion of work from Start Date. Do not commence Work before project schedule has been provided and reviewed.
  - .2 Provincial Ministry's Notice of Project form or equivalent for Place of Work, notarized and executed.
  - .3 Current WSIB CAD-7 Report & Clearance Letter for Place of Work.
- .3 Provide to Quality Assurance Observer, at Prestart Meeting:
  - .1 Finalized project work schedule listing start date, anticipated number of working days working, and manpower assignments for project.
  - .2 Sample of specified warranties from Manufacturer and Contractor for proposed materials and products to be installed.
  - .3 Letter and completed Manufacturer's project warranty application form sent to "Warranty Provider" advising them of project start and particulars.
  - .4 Complete Materials List; including installation instructions and product datasheets providing characteristics of all proposed materials to be installed.
  - .5 Material Safety Data Sheets (MSDS) pertaining to all proposed materials to be used on site to perform Work.
  - .6 Certifications by manufacturers of roofing and insulating materials that all products supplied comply with all requirements of current identified ASTM and other industry standards or practices.
  - .7 Letter by Contractor certifying that all specified roof system components are compatible, are approved by Manufacturer, meet specified warranty terms, and are compatible with existing substrates.
  - .8 Applicable shop drawings for tapered insulation layout and other specified items to be reviewed by Consultant prior to prefabrication and delivery.
  - .9 Attachment pattern diagrams to meet wind uplift requirements for mechanical fastening and adhesive securement of deck boards, insulation boards, and cover boards where applicable to project.

- .10 List of “Trained and Carded Membrane Approved Applicators” to work and be present during performance of Work.
- .11 Health & Safety Plan for Specific Work Site including contact list and phone numbers for project, and twenty-four (24) hour emergency contact numbers.
- .4 Provide to Owner, at project completion:
  - .1 Completed and executed Roof Warranty for project areas,
  - .2 Completed and executed Contractor’s Warranty for project areas.

## 1.5 QUALITY ASSURANCE

- .1 Compatibility between components of roofing system and wall system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in new system will meet this requirement.
- .2 Perform Work in accordance with Contracts Documents and Manufacturer’s written instructions.
- .3 No deviation to be made from Project Specifications or approved shop drawings without prior written approval by Consultant and Manufacturer.
- .4 Contractor to arrange for a Technical Representative of Manufacturer to review installed roof system wherever a Standard or System Warranty requirement has been specified.
- .5 Upon completion of new installation, provide certification that all work has been done in strict accordance with Contract Documents and to Manufacturer’s requirements.

## 1.6 QUALITY OBSERVATION

- .1 IRC Building Sciences Group, hereafter known as “Observer”, is an independent Quality Observation Agency appointed by Owner to observe performance of roof Work:
  - .1 Roofing Contractor to Arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer’s instructions and reference procedures to be followed on project.
  - .2 Provide to Observer date when each phase of work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
  - .3 Arrange Final Observation and examination of installed roof with both Observer and Manufacturer’s Technical Representative.
- .2 Cooperate with Observer and afford all facilities necessary to permit full Quality Observations during performance of Work. Act immediately on instructions given by Observer.
- .3 When required, provide roof cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.
- .4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.
- .5 Copies of Observation Reports issued to Owner and Prime Contractor.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Site storage is limited. Where applicable, location of storage and related facilities to be coordinated with Prime/General Contractor.

- .2 All materials to be delivered and stored in their original packaging bearing manufacturers label, grade and product weight, including all other related standards, specifications, and like.
- .3 All materials to be adequately protected from inclement weather conditions and stored in a dry, well ventilated and weather protected location. Use only dry materials and apply only during weather that will not introduce moisture into roofing system.
- .4 Only materials to be installed on same day to be removed from protected location to work site.
- .5 During extreme temperature, materials to be stored in a heated location with a 4.4°C (40°F) minimum temperature and removed only as needed.
- .6 Modified bitumen rolls to be kept clear of all flames and sparks when not being applied to roof.
- .7 All materials in a rolled configuration to be stored on end, elevated off ground, and on a pallet or skid to protect bottom surface from foreign debris and moisture.
- .8 Restrict stockpiling of material in one location on roof to prevent exceeding specified deck live load capacity. Avoid point loading that may compromise structural integrity of roof.
- .9 Handle and store products in a manner to prevent damage and deterioration.
- .10 Remove and replace damaged products at own expense and to satisfaction of Consultant.

## 1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply roofing materials to damp, wet, or frozen deck or substrates.
- .2 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- .3 Only install as much new roofing as can be made weather-tight each day, including all flashing and detail work. All seams to be sealed before leaving job site that work day.
- .4 All work to be scheduled and executed without exposing interior building areas to effects of inclement weather. Existing building and its contents to be protected against all risks.
- .5 All new and temporary construction, including equipment and accessories, to be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- .6 Uninterrupted water-stops to be installed at end of each day's work and to be completely removed before proceeding with next day's work. Water-stops to not emit dangerous or unsafe fumes and to not remain in contact with finished roof as installation progresses. Contaminated membrane to be replaced at no cost to Owner.
- .7 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, provide all necessary protection and barriers to segregate work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over felt or plywood over insulation board to be provided for all new and existing roof areas that receive rooftop traffic during construction.
- .8 Prior to and during application, all dirt, debris and dust to be removed from surfaces by vacuuming, sweeping, blowing with compressed air, and/or similar methods.
- .9 Follow all safety regulations as required by OHS (Occupational Health and Safety) and any other applicable authority having jurisdiction.

- .10 All roofing, insulation, flashings and metal work removed during construction to be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Local, Provincial, and National requirements.
- .11 All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) to be immediately removed from site by Contractor and properly transported to a legal dumping area authorized to receive such material.
- .12 Take precautions that storage and/or application of materials and/or equipment does not overload roof deck or building structure.
- .13 Flammable adhesives and deck primers to not be stored and not be used in vicinity of open flames, sparks and excessive heat.
- .14 All rooftop contamination that is anticipated or that is occurring to be reported to manufacturer to determine corrective steps to be taken.
- .15 Verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Contractor to report any such blockages in writing to Consultant for corrective action prior to installation of roof system.
- .16 Immediately stop work if any unusual or concealed condition is discovered and immediately notify Consultant of such condition in writing in order to obtain additional instruction.
- .17 Site cleanup, including both interior and exterior building areas that have been affected by construction, to be completed to satisfaction of Consultant.
- .18 All landscaped areas damaged by construction activities to be repaired at no cost to Owner.
- .19 Do not install membrane under following conditions without consulting Manufacturer's Technical Department for precautionary steps:
  - .1 Roof assembly permits interior air to pressurize membrane underside.
  - .2 Any exterior wall has 10% or more of surface area comprised of opening doors or windows.
  - .3 Wall to deck intersection permits air entry into wall flashing area.
- .20 Take precautions when using adhesives at or near rooftop vents or air intakes. Avoid adhesive odours from entering building. Coordinate operation of vents and air intakes in such a manner as to avoid intake of adhesive odour while ventilating building. Keep lids on unused cans at all times.
- .21 Protective wear to be worn when using solvents or adhesives or as required by job conditions.

## 1.9 PREPARATORY WORK

- .1 Review roof levels and advise Consultant of any deviation from specified tolerances.
- .2 Review roof drain locations and number. Advise Consultant of any deviation or alteration from specifications.
- .3 Sweep roof deck free of dust or dirt and remove all debris prior to any installation work.
- .4 Infrared Thermal Scan on Roof Areas 2.6 & 2.7: Carry a cost of \$2,500.00 plus applicable taxes in Bid Price to perform an infrared thermal scan on Roof Areas 2.6 and 2.7, over entire each roof

area, to determine location of wet and/or deteriorated sections of existing roof system to be cut-out and replaced prior to installation of new roof.

- .1 Infrared scan to be conducted in presence of Quality Observer by qualified thermal imaging professional.
- .2 Notify Quality Assurance Observer a minimum of forty-eight (48) hours prior to scan.
- .3 Mark identified anomaly areas with water resistant paint.
- .4 Allow for repair and localized replacement of damaged existing roof system in Bid Price on 20% of each roof area.

## 1.10 SAFETY AND PROTECTION

### .1 Solvents, Adhesives and Membranes:

- .1 Store only enough solvents and adhesives on roof for same day's use. Do not leave adhesives on roof over night. Manufacturer supplied adhesives should be stored in their over night containers. Minimum temperature for solvent based adhesives and primers is -5°C (23°F).
- .2 Do not install roof membrane when temperature remains below 5°C (41°F) for self adhering installations. Apply materials in accordance with manufacturer's recommendations and in accordance with Canadian Modified Bitumen Manufacturer's Association.
- .3 Refer to Manufacturer's literature for additional guidelines.
- .4 Protect walls where hoisting is required.
- .5 Protect roofs from damage due to traffic and materials handling until completion.
- .6 Keep a fire extinguisher at access to building interior wherever solvent based products are stored or used.

### .2 Fire Safety:

- .1 Keep charged and ready fire extinguishers on site at all times, including on roof and at access points to building interior.
- .2 Provide a minimum two (2) hour fire watch at completion of each day's activities on all projects implementing use of propane torches and/or burners.
  - .1 A handheld, infrared thermal scanner suitable for roofing applications and fire alert must be kept on site at all times during torching procedures. Fire scanner by Raytek or approved IRC Group equal. Check seams and flashings at hourly intervals for flare ups.

### .3 Health and Safety:

- .1 Contractor to comply with all safety requirements as per current printed edition of Provincial Occupational Health and Safety Act and with Ontario Industrial Roofing Contractors Association (OIRCA) standards.

## 1.11 WARRANTY

### .1 Contractor Workmanship Warranty:

- .1 On Roof Areas 2.5, 2.6, and 2.7: Provide Owner with Contractor's Warranty for Workmanship on a Ontario Industrial Roofing Contractors Association (OIRCA) approved form, signed, authorized, and executed. Warranty period to be for minimum two (2) years from date of Substantial Completion.
  - .1 During Contractor's warranty term, any work related to roofing, flashing, or metal found to be defective or otherwise not in accordance with Contract Documents, to be promptly repaired by Contractor at no additional cost to Owner and in accordance with drawings and specifications. Applicator's warranty obligation to run directly to Owner with a copy sent to Manufacturer.
- .2 Roof Membrane Warranty:
  - .1 On Roof Areas 2.5, 2.6, and 2.7: Provide Manufacturer's Labour, Material, and Workmanship Warranty covering Membrane Watertightness for a period of ten (10) years on designated roof replacement and retrofit areas from date of Substantial Completion.
    - .1 Owner to notify both membrane Manufacturer and Contractor of any leak that occurs during time period while warranties remain in effect.
- .3 All other items not specifically noted above to be supplied with a two (2) year Contractor's Warranty for materials and workmanship.
- .4 Cost of all warranties to be included in Bid Price.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- .1 All membrane materials are to be supplied by Johns Manville (JM), Carlisle Syntec Systems (Carlisle), Firestone Building Products Company (Firestone), meeting manufacturer's respective material compatibility requirements to achieve required System Warranty.
- .2 Components to be used that are other than those supplied or manufactured by membrane manufacturer may be submitted for review and acceptance by membrane manufacturer.
- .3 Membrane Manufacturer's acceptance of any other product is only for a determination of compatibility with products and not for inclusion in manufacturer's warranty.
- .4 Specifications, installation instructions, limitations, and/or restrictions of respective manufacturers must be reviewed by Consultant for acceptability for intended use with membrane manufacturer's products.

### **2.2 MEMBRANE PRIMER**

- .1 General Purpose: Asphalt Primer to ASTM D41 Type II.
  - .1 Solvent Based Primer: Composed of volatile solvents, synthetic polymers, and/or adhesive enhancing resins to prepare surfaces for membrane application.
    - .1 CCW-550 Primer by Carlisle,
    - .2 JM Asphalt Primer (Black) by Johns Manville,
    - .3 Elastocol 500 Primer (Black) by Soprema,
    - .4 IRC Group approved equivalent.
- .2 High-tack for Self-adhered Membranes:

- .1 Solvent Based Primer: Composed of volatile solvents, synthetic polymers, and/or adhesive enhancing resins to prepare surfaces for self-adhered membranes.

- .1 JM SA Primer (Red) by Johns Manville,
- .2 Elastocol Stick Primer (Red) by Soprema,
- .3 IRC Group approved equivalent.

### 2.3 MECHANICAL FASTENERS:

- .1 Fasteners for Deck, Insulation, and Cover Boards:

- .1 Threaded Screws: Self tapping, epoxy coated carbon steel or solid stainless steel deck screws approved by membrane for system warranty requirements. Acceptable Product on 22 gauge metal roof decking:

- .1 #12 or #14 HP fasteners by Carlisle,
- .2 #12 Dekfast Fasteners by Dekfast Product Group,
- .3 #12 All Purpose fasteners by Firestone,
- .4 #12 Ultrafast fasteners by Johns Manville,
- .5 #12 Trufast DP Roofing Fasteners by Trufast.

- .2 Securement Plates: 76mm (3") diameter round, min. 26 Ga. (0.018") metal stress plates with min. AZ50 Galvalume coating, and approved by membrane manufacturer.

- .1 Insulation Fastening Plates by Carlisle,
- .2 Galvalume Steel 3" Round Plates by Dekfast Product Group,
- .3 Insulation Fastening Plates by Firestone,
- .4 Ultrafast Square or Round Metal Plates by Firestone,
- .5 Insulation Plates MP-3-TF by Trufast.

- .2 Fasteners for Mechanically Secured EPDM Reinforcement Strips:

- .1 Threaded Screws: Self tapping, corrosion resistant epoxy coated, carbon steel deck screws approved by membrane manufacturer for system requirements.

- .1 On metal, wood plank, and plywood roof deck. Acceptable product:

- .1 #15 HP-X fasteners by Carlisle,
- .2 #15 High Load fasteners by Johns Manville,
- .3 #12 Heavy-Duty fasteners by Firestone.

- .2 On concrete or metal roof deck. Acceptable product:

- .1 #14 HD 14-10 fasteners by Carlisle,
- .2 #14 All Purpose Fasteners by Johns Manville,
- .3 #12 Heavy-Duty fasteners by Firestone.

- .2 Seam Securement Plates:

- .1 Metal Plates: Min. 51mm (2.0") diameter round, min. 20 Ga. (0.038") metal stress plates with min. AZ50 Galvalume, and approved by membrane manufacturer. Acceptable product:

- .1 (2") Seam Fastening Plates (except on metal decks) by Carlisle,
- .2 (2") APB Membrane Fastening Plates by Johns Manville,
- .3 (2.4") High Load Membrane Fastening Plates by Johns Manville,
- .4 (2") Metal Seam Plates by Firestone.



- .2 Polymer Plates: Min. 51mm (2.0”) diameter round, barbed, polymer stress plates and approved by membrane manufacturer. Acceptable product:
  - .1 (2”) HP Polymer Seam Plates (for metal decks) by Carlisle.

#### 2.4 ROOFING BOARD ADHESIVE

- .1 Polyurethane Adhesive for Insulation Boards and Cover Board:
  - .1 Ribbons of one or two component polyurethane foamable adhesive.
    - .1 INSTA-STIK Adhesive by Flexible Products Company-Roofing Group (DOW),
    - .2 JM Green Two-Part Urethane Insulation Adhesive by Johns Manville,
    - .3 OlyBond500 Adhesive by OMG Roofing Products,
    - .4 Para-Stik Adhesive by Siplast,
    - .5 Duotack by Soprema.

#### 2.5 VAPOUR RETARDER RESTORATION: KRAFT PAPER AT REPAIR SECTIONS

- .1 Kraft Paper, Field Sheet:
  - .1 On Roof Areas 2.6 and 2.7: Two layers of Kraft paper laminated together with asphalt and edge reinforced with glass fibers to requirements of CAN/CGSB-51.33 Type II (2) and listed by ULC.
    - .1 Armourgard Vapour Retardant by IKO,
    - .2 SopraStop by Soprema.
- .2 Kraft Paper, Adhesive:
  - .1 On Roof Areas 2.6 and 2.7: Non-flammable bituminous based adhesive made from fast evaporating solvents, bitumen, and SBS polymers and as recommended by vapour retarder manufacturer.
    - .1 Armourgard Vapour Barrier Adhesive by IKO,
    - .2 SopraStop Adhesive by Soprema.

#### 2.6 FILLER BASE INSULATION: POLYISOCYANURATE AT REPAIR SECTIONS

- .1 Polyisocyanurate Insulation: Closed-cell polyisocyanurate foam rigid insulation boards to ASTM C1289 Type II, Class 1, 2, or 3, Grade 2, manufactured with HCFC-free blowing agent (Pentane) bonded to inorganic coated glass facers on top and bottom surfaces during manufacturing process.
  - .1 Approved and listed for use with Noncombustible and FM Class 1 rated insulated roof assemblies to FM Standard 4450 on Insulated Steel Deck Roofs and FM Standard 4470 on Roof Covers for durability, wind uplift, and fire resistance.
  - .2 Meet physical property requirements of ASTM C1289 and CAN/ULC S704.
  - .3 Compressive strength: Min. 138 kPa (20 psi) to ASTM C1621, Grade 2.
  - .4 Dimensional stability change of less than 2% conforming to ASTM D2126.
  - .5 Conformity to CAN/ULC S704 and Can/ULC S770 for Long Term Thermal Resistance (LTTR) in polyisocyanurate insulation.
  - .6 Acceptable Products:

- .1 ACfoam III polyisocyanurate by Atlas Roofing Corp.,
- .2 SecurShield polyisocyanurate by Carlisle,
- .3 Resista polyisocyanurate by Firestone,
- .4 Engry 3 CGF polyisocyanurate by Johns Manville,
- .5 Sopra-ISO Plus polyisocyanurate by Soprema.

.2 Polyisocyanurate Insulation Thickness:

- .1 On Roof Area 2.6: Continuous 25mm (1.0") flat panels; to match height of existing insulation system when installed with new 13mm (0.5") gypsum cover board panels at cut-out repair areas.

## 2.7 FILLER FIBREBOARD INSULATION: GYPSUM ROOF BOARD AT REPAIR SECTIONS

- .1 Roof Board: Dimensionally stable, fire resistant, gypsum based roof board with treated core for moisture and mould resistance; size no larger than 1.22m x 2.44m (4'x8').

- .1 Glass-Mat Faced: Siliconized gypsum roof board with factory laminated glass-mat facer meeting ASTM C 1177. Boards with factory applied primer preferred.

- .1 DensDeck Prime by Georgia-Pacific,
- .2 JM DensDeck Prime Glass-Mat Roof Board by Johns Manville.
- .3 Securock Glass-Mat Roof Board by USG.

- .2 OR Unfaced, Fibre Reinforced: Gypsum roof board with homogenous composition reinforced with cellulose fibres meeting ASTM C 1278.

- .1 JM Securock Gypsum-Fibre Roof Board by Johns Manville,
- .2 Securock Gypsum-Fibre Roof Board by USG.

.2 Roof Board Thickness:

- .1 On Roof Area 2.7: Filler roof board thickness to match existing cover board.

## 2.8 EXISTING BUR MEMBRANE RESTORATION: MOD. BIT. MEMBRANE AT REPAIR SECTIONS

- .1 On Roof Areas 2.6 and 2.7: Base Sheet Field Membrane:

- .1 Self-adhered grade modified bitumen; minimum 2.6mm thick, with minimum 180 g/m<sup>2</sup> non-woven polyester scrim, random glass fibre mat or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface lightly sanded and self-adhesive bitumen bottom surface covered with polyolefin or silicone release film.

- .1 MB Base SA by Firestone,
- .2 DynaGrip SD/SA by Johns Manville,
- .3 Sopraflash Stick 40 (Duo Selvedge) by Soprema.

- .2 OR Torch grade modified bitumen; minimum 2.6mm thick, with minimum 180 g/m<sup>2</sup> non-woven polyester scrim, random glass fibre mat or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface lightly sanded and bottom surface lightly sanded or covered with thermofusible polyolefin film.

- .1 SureMB 120TG Base Ply by Carlisle,
- .2 SBS Glass Torch Base by Firestone,
- .3 DynaBase HW by Johns Manville,
- .4 Sopralene 180 Sanded or Sopralene 180 SP 3.5mm by Soprema.

## 2.9 VAPOUR RETARDER: MODIFIED BITUMEN MEMBRANE

- .1 On Roof Area 2.5: Base Sheet Field Membrane:
  - .1 Self-adhered grade modified bitumen; minimum 2.6mm thick, with minimum 180 g/m<sup>2</sup> non-woven polyester scrim, random glass fibre mat or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface lightly sanded and self-adhesive bitumen bottom surface covered with polyolefin or silicone release film.
    - .1 MB Base SA by Firestone,
    - .2 DynaGrip SD/SA by Johns Manville,
    - .3 Sopraflash Stick 40 (Duo Selvedge) by Soprema.
  - .2 OR Torch grade modified bitumen; minimum 2.6mm thick, with minimum 180 g/m<sup>2</sup> non-woven polyester scrim, random glass fibre mat or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface lightly sanded and bottom surface lightly sanded or covered with thermofusible polyolefin film.
    - .1 SureMB 120TG Base Ply by Carlisle,
    - .2 SBS Glass Torch Base by Firestone,
    - .3 DynaBase HW by Johns Manville,
    - .4 Sopralene 180 Sanded or Sopralene 180 SP 3.5mm by Soprema.

## 2.10 BASE INSULATION: CGF POLYISOCYANURATE

- .1 Base Insulation Type: Closed-cell polyisocyanurate foam rigid insulation boards to ASTM C1289 Type II, Class 1, 2, or 3, Grade 2, manufactured with HCFC-free blowing agent (Pentane) bonded to inorganic coated glass facers on top and bottom surfaces during manufacturing process:
  - .1 Approved and listed for use with Noncombustible and FM Class 1 rated insulated roof assemblies to FM Standard 4450 on Insulated Steel Deck Roofs and FM Standard 4470 on Roof Covers for durability, wind uplift, and fire resistance.
  - .2 Meet physical property requirements of ASTM C1289 and CAN/ULC S704.
  - .3 Dimensional stability change of less than 2% conforming to ASTM D2126.
  - .4 Conformity to CAN/ULC S704 and Can/ULC S770 for Long Term Thermal Resistance (LTTR) in polyisocyanurate insulation.
  - .5 Acceptable Products:
    - .1 ACFoam III polyisocyanurate by Atlas Roofing Corp.,
    - .2 SecurShield polyisocyanurate by Carlisle,
    - .3 Resista polyisocyanurate by Firestone,
    - .4 Enrgy 3 CGF polyisocyanurate by Johns Manville,
    - .5 Sopra-ISO Plus polyisocyanurate by Soprema.
- .2 Base Insulation Thickness:
  - .1 On Roof Area 2.5: Continuous flat layer of polyisocyanurate insulation boards 51mm (2.0") in thickness, with butt lapped joints.
- .3 Base Insulation Panel Size:
  - .1 Flat Panels: 1.22m x 2.44m (4' x 8') max. size when mechanically fastened or loose laid.

- .2 Tapered Panels: 1.22m x 1.22m (4' x 4') max. size regardless of attachment method.
- .4 Tapered Drainage Sumps: Tapered closed-cell polyisocyanurate foam rigid insulation boards with inorganic coated glass facers.
  - .1 At Roof Drains: Delete section of base insulation to accommodate tapered sump:
    - .1 On Roof Area 2.5: 1.22m x 1.22m (4' x 4') and tapered from 51mm (2.0") at outer edge down 2% to 38mm (1.5") in thickness at center.
- .5 All tapered insulation to be factory cut and mitred, and supplied by Accu-plane Enterprises Inc., Beacon Roofing Supply, Everest Supply Inc., or Posi-slope Enterprises Inc., or ModulR TS Inc.
  - .1 Submit all shop drawings to Consultant for review prior to prefabrication.

## 2.11 COVER BOARD

- .1 Gypsum Cover Board: Dimensionally stable, fire resistant, gypsum based roof board with treated core for moisture and mould resistance; size no larger than 1.22m x 2.44m (4' x 8'):
  - .1 Glass-Mat Faced: Siliconized gypsum roof board with factory laminated glass-mat facer meeting ASTM C 1177. Boards with factory applied primer preferred.
    - .1 DensDeck Prime by Georgia-Pacific,
    - .2 JM DensDeck Prime Glass-Mat Roof Board by Johns Manville,
    - .3 Securock Glass-Mat Roof Board by USG.
  - .2 OR Unfaced, Fibre Reinforced: Gypsum roof board with homogenous composition reinforced with cellulose fibres meeting ASTM C 1278.
    - .1 JM Securock Gypsum-Fibre Roof Board by Johns Manville,
    - .2 Securock Gypsum-Fibre Roof Board by USG.
- .2 Cover Board Thickness:
  - .1 On Roof Areas 2.6 and 2.7: Flat gypsum roof board 13mm (1/2") thick.

## 2.12 EPDM MEMBRANE

- .1 New 100% cured, synthetic rubber Ethylene-Propylene-Diene-Monomer (EPDM) membrane sheets for ballasted and fully adhered applications with fully adhered flashings. Membrane and flashings to be Non-reinforced and to meet requirements of ASTM D4637. Membrane sheets to include min. 76mm (3") wide Factory Applied Tape (FAT) along seams.
  - .1 Non-Reinforced EPDM Membrane: Black in colour, 1.5mm (60 mil) thick:
    - .1 Sure-Seal Dusted Ballasted EPDM by Carlisle,
    - .2 RubberGard LS-FR PT EPDM by Firestone,
    - .3 EPDM NR 60 MIL by Johns Manville.
  - .2 EPDM Membrane Adhesive: A high-strength, yellow coloured, synthetic rubber adhesive used for bonding EPDM membrane:
    - .1 90-8-30A EPDM Bonding Adhesive by Carlisle,
    - .2 BA-2004 (T) EPDM Bonding Adhesive by Firestone,
    - .3 JM EPDM Membrane Adhesive by Johns Manville.

- .3 All EPDM membrane materials and accessories are to be supplied by one manufacturer; Carlisle, Firestone, or Johns Manville. All respective material compatibility requirements of manufacturer must be met to achieve required Warranty.
- .2 On Roof Area 2.5: New EPDM membrane to be loose laid and ballasted.
- .3 On Roof Areas 2.6 and 2.7: New EPDM membrane to be fully adhered in membrane adhesive.

### 2.13 EPDM FLASHING ACCESSORIES

- .1 Perimeter Reinforcement Strip: Cured EPDM membrane strip installed along base of all walls, perimeters, and curbs:
  - .1 152mm (6") wide, pressure sensitive RUSS (Reinforced Universal Securement Strip) by Carlisle with 76mm (3") wide Factory Applied Tape (FAT) along one edge.
  - .2 152mm (6") wide Rubbergard Reinforced Perimeter Fastening (RPF) by Firestone.
  - .3 152mm (6") wide Reinforced Termination Strip (RTS) with factory laminated seam tape by Johns Manville.
- .2 Pressure Sensitive Uncured Flashing: For restoration of inside and outside corner flashings as well as field seams and T-joints:
  - .1 152mm (6") or 229mm (9") wide, 1.5mm (60mil) thick uncured Elastoform EPDM flashing laminated to a 0.9mm (35mil) factory applied SecurTAPE by Carlisle.
  - .2 152mm (6") or 229mm (9") wide Formflash membrane laminated to splice tape; Quickseam Flashing by Firestone.
  - .3 152mm (6") or 229mm (9") wide Peel & Stick Flashing by Johns Manville.
- .3 T-Joint Cover Overlayment: Cured EPDM flashing used to overlay existing T-joint covers:
  - .1 1.0mm (40mil) thick, 305mm x 305mm (12" x 12"), cured Elastoform flashing with factory applied SecurTAPE providing 1.9mm (75mil) of total thickness by Carlisle.
  - .2 305mm (12") wide Formflash membrane laminated to splice tape; Quickseam Flashing by Firestone.
  - .3 146mm (5.75") diameter uncured EPDM membrane with factory laminated seam tape by Johns Manville.

### 2.14 EPDM CLEANER, PRIMERS, AND SEALANTS

- .1 Splice Tape: Min. 76mm (3") wide, pressure sensitive splice tape used for splicing adjoining sections of EPDM membrane together. Comply with South Coast Air Quality Management District Rule 1168.
  - .1 Sure-Seal SecurTAPE by Carlisle,
  - .2 Quickseam Splice Tape by Firestone,
  - .3 Seam Tape Plus by Johns Manville.
- .2 Membrane Cleaner: A clear, solvent-based cleaner used to loosen and remove dirt and other contaminants from surface of existing, exposed EPDM membrane surfaces prior to application of pressure sensitive splice tape or cover strips.
  - .1 Sure-Seal Splice Cleaner by Carlisle,
  - .2 SW-100 (Splice Wash) by Firestone,

- .3 Splice Cleaner by Johns Manville.
- .3 Primer: Solvent base primer used to prepare surface of new EPDM membrane surfaces for application of pressure sensitive splice tape or cover strips.
  - .1 Sure-Seal HP-250 primer by Carlisle,
  - .2 Splice Primer SP-1924 by Firestone,
  - .3 EPDM Tape Primer by Johns Mansville.
- .4 Splicing Cement: A high-strength, butyl-based contact cement that is used as a primer to prime surface of aged existing EPDM membrane prior to application of application of pressure sensitive splice tape or cover strips.
  - .1 Sure-Seal (black) EP-95 Splicing Cement by Carlisle,
  - .2 Splice Adhesive SA-1065 by Firestone,
  - .3 EPDM Lap Cement (black) by Johns Manville.
- .5 Lap Sealant: A black, heavy-bodied material used to seal exposed edges of EPDM membrane, pressure sensitive cover strips, and EPDM membrane flashings.
  - .1 Sure-Seal (Black) Lap Sealant by Carlisle,
  - .2 Lap Sealant LS-3029 by Firestone,
  - .3 EPDM Lap Caulk (Black) by Johns Manville.
- .6 Water Cut-Off Mastic: A one-component, low viscosity, self-wetting, butyl blend mastic used as a sealing agent for restoration of termination bars, roof drain repairs, and Pre-Molded pipe flashing boots.
  - .1 Water Cut-off Mastic by Carlisle,
  - .2 Water-Block S-20 by Firestone,
  - .3 Single Play Sealing Mastic (grey) By Johns Manville.
- .7 Pourable Sealer: EPDM compatible.
  - .1 Sure-Seal One Part Pourable Sealer by Carlisle,
  - .2 S-10 Two Part Sealer by Firestone,
  - .3 EPDM/PVC Pourable Sealer, Two Part by Johns Manville.
- .8 Night Sealant Caulking: S-30 by Firestone or equivalent by Carlisle and Johns Manville.
- .9 Fastener Sealer: S-40 by Firestone or equivalent by Carlisle and Johns Manville.

## **2.15 MEMBRANE CLEANING PRODUCTS**

- .1 Formula 409: All-purpose cleaner manufactured by Clorox Company, used to remove dirt and grime from surface of roofing membrane.
- .2 Lestoil: Concentrated, heavy duty cleaner manufactured by Clorox Company, used to remove dirt and grime from surface of roofing membrane.
- .3 Spic and Span: Low sudsing detergent manufactured by Spic and Span Company, used to remove dirt and grime from surface of roofing membrane.
- .4 Tide: Low sudsing detergent manufactured by Proctor & Gamble, used to remove dirt and grime from surface of roofing membrane.

## **2.16 MEMBRANE PROTECTION MAT**

- .1 Polypropylene Fabric Mat:

- .1 On Roof Area 2.5: Minimum 1.5mm (0.060") thick UV resistant, needle-punched, polypropylene fabric between EPDM membrane and ballast with a minimum nominal weight of 154 g/m<sup>2</sup> (4.5 oz/yd<sup>2</sup>). Rolls min. 4.6m (15'-1") wide.
  - .1 Sure-Seal HP Protective Mat by Carlisle,
  - .2 Protection Mat by Firestone,
  - .3 Protective Stone Mat by Johns Manville.

## 2.17 ROOF BALLAST

- .1 Stone Ballast:
  - .1 On Roof Area 2.5: New aggregate comprised of 38.1mm to 51mm (1.5" to 2.0") diameter, clean round stone, with no jagged edges or fractures, conforming to ASTM D448 No. 4, and with no more than 10% out of size.
  - .2 Submit a 10 lb sample of proposed ballast to Consultant for review prior to delivery to Worksite. Contractor to absorb all costs associated with shipment and return of improper and/or inappropriate ballast, with no cost to Owner.

## 2.18 MISCELLANEOUS INSULATION

- .1 Batt Insulation: Non-combustible, water resistant, vapour permeable, semi rigid mineral wool batt insulation made from slag and basalt rock, conforming to CAN/ULC S702-09 with a density of 45 kg/m<sup>3</sup> (2.8 lb/ft<sup>3</sup>).
  - .1 Roxul AFB (Acoustical Fire Batt) by Roxul Inc.
- .2 Extruded Polystyrene Insulation: Closed cell, Type IV (4) extruded expanded polystyrene foam insulation boards with continuous skin surface on top face and back meeting requirements of CAN/ULC S701:
  - .1 Foamular 350 or 400 series XPS by Owens Corning,
  - .2 Styrofoam Brand Roofmate XPS insulation by Dow,
  - .3 Extruded Polystyrene – XPS insulation by Siplast,
  - .4 Sopra-XPS 35 insulation by Soprema.

## 2.19 FASTENERS, PLATES & FASTENING BARS

- .1 All fasteners and plates to meet requirements of Factory Mutual Global 4470 Standard for wind uplift and corrosion resistance in roofing.
- .2 Wood to steel, wood to wood or steel to steel:
  - .1 Tru-Fast Ultra Solid Stainless Steel fastener or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4").
- .3 Wood/steel to concrete or concrete block:
  - .1 Perma-Grip Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4").
  - .2 Tru-Fast Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 32mm (1 1/4").
- .4 Steel/aluminum to aluminum:

- .1 Tru-Fast DP with Trucote PC-3 corrosion protection fastener c/w EPDM galvanized steel sealing washers or equal approved by membrane Manufacturer, to penetrate substrate by 19mm (3/4").
- .5 Termination bar for membrane:
  - .1 Extruded aluminum, 1.5mm (0.060") thick x 25mm (1") wide x 3.05m (10') long with 6mm x 9.5mm (1/4" x 3/8") slotted holes on 203mm (8") o/c. Acceptable material: TB-120 aluminum termination bar by Tru-Fast or equal approved by membrane Manufacturer.
- .6 Termination bar fastener for wood, steel or aluminum:
  - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 19mm (3/4") c/w EPDM galvanized steel sealing washers or Construction Fasteners Inc. Woodgrip #14 screw complete with Senti coating on threads, Chromagard colour match head and EPDM washer, or equal approved by membrane Manufacturer,
- .7 Termination bar fastener for concrete or masonry:
  - .1 Tru-Fast Tap Grip Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4") c/w EPDM galvanized steel sealing washers.
- .8 Pre-painted metal flashing to steel or wood:
  - .1 #14 Colormate fasteners by Leland Industries, Construction Fasteners Inc. Woodgrip #14 screw complete with Senti coating on threads and Chromagard colour match heads with EPDM washer, or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4").
- .9 Membrane to wood:
  - .1 Galvanized round top roofing nails with minimum 25mm (1") diameter heads or plate and head combination, to penetrate substrate a minimum 32mm (1 1/4").

## 2.20 ROOFING ACCESSORIES

- .1 Pitch Pockets/Pans: Unless otherwise designated by Consultant, all pitch pocket type penetration flashings are strictly prohibited.
- .2 Fixed, rigid penetrations:
  - .1 Flash-in using prefabricated EPDM Flashing Boots where approved by membrane manufacturer and meeting warranty requirements. Cut diameter size to suit as required with stainless steel clamping ring and sealant. Use split flashing boots where penetrations prohibit installation with regular slip-over boot flashing.
- .3 Semi-rigid penetrations:
  - .1 Require installation of rigid flashings and supports: IRC copper gooseneck detail, IRC doghouse detail, or suitable prefabricated aluminum flashing to suit each penetration:
  - .2 Rigid roofing accessories to be manufactured from spun aluminum or copper as required, and complete with removable caps where applicable. All units are to have foamed-in-place, closed-cell, urethane foam insulation sprayed into unit at plant under controlled conditions. All prefab flanges to be primed with thermoplastic compatible coating.
    - .1 Retrofit Roof Drain: RD-4C-RR-FLAT by Thaler Metal Ind. Inc.,
    - .2 Plumbing Stack Flashing: SJ-26 by Thaler Metal Industries Inc.,



- .3 Conduit & Cable Support: MEF-2A by Thaler Metal Industries Inc.,
- .4 Tallcone/B-Vent Flashing: MEF-4A by Thaler Metal Industries Inc.,
  
- .4 Membrane Tools: Use tools, hand rollers, weighted rollers, squeegees, etc. as recommended by membrane Manufacturer for installation of their product to ensure compatibility and avoid damaging of pressure sensitive membranes.
  
- .5 Pourable Sealer: Elastomeric pourable sealer as supplied by Carlisle, Firestone, or Johns Manville.
  
- .6 Sealing Compound: Rubberized Sealing Compound to CAN/CGSB-37.29.
  
- .7 Spray Urethane foam: One or two component polyurethane spray foam insulation. Use low pressure spray foam insulation at force sensitive areas.
  
- .8 Sheet Metal Flashings and Trim: As per Section 07620 and fabricated from 24 gauge prepainted steel. Hook strips to be 2 gauges heavier than flashings. Colour to match existing.
  
- .9 Sealants: As per Section 07920. Colour of sealants to match component applied against.

## **PART 3 - EXECUTION**

### **3.1 WORKMANSHIP**

- .1 Perform roofing work which is not specifically covered by these Specifications in accordance with applicable industry standards and good roofing practises of:
  - .1 Canadian Roofing Contractors Association (CRCA),
  - .2 Canadian Modified Bitumen Manufacturer's Association's recommendations,
  - .3 Manufacturer's preprinted and published technical specifications,
  - .4 ULC Design No. S-107 criteria,
  - .5 Factory Mutual Global design criteria FM 1-28 and 1.49,
  - .6 Compliance with local fire insurance requirements,
  - .7 Compliance with local building codes.
  
- .2 Procedures for application of materials should be in accordance with Manufacturer's recommendations.
  - .1 Advise Consultant of adjustments to specified roofing procedures recommended by Manufacturer or due to site conditions.
  - .2 Written approval by Consultant is required to make any adjustments to specified procedures.
  
- .3 All work to be carried out in accordance with drawings, and specifications provided in these contract documents.
  - .1 All drawing details supplied with this package constitute acceptable installations. Any deviance from these details must first approved by Consultant prior to installation.
  
- .4 While work is in progress, all steps must be taken to safeguard building from damage due to weather, fire, and structural overloading.
  
- .5 Review underside of roof deck when installing fasteners, where possible, to avoid accidental damage.

- .6 Apply each part of roofing system when surfaces are free of moisture for successful application. Consult with manufacture's printed instructions for successful application.
- .7 Do priming for asphalt roofing in accordance with CAN/CGSB 37-GP-15M and as recommended by membrane manufacturer.
  - .1 Adhesives or sealants and liquid primers will not be applied until surfaces are dry.

### 3.2 EXAMINATION OF SITE CONDITIONS

- .1 Examine existing site conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for finished condition of work.
- .2 Defective work resulting from application to unsatisfactory conditions will be considered responsibility of those performing work of this section.

### 3.3 PROTECTION

- .1 Adjacent Buildings and Tenants:
  - .1 Take care to not damage any adjacent or closely located buildings and all related grounds in vicinity of Work during roofing operations.
  - .2 Protect against infiltration of dust, debris, and other such contaminants and occurrences.
  - .3 Locate garbage chutes to minimize exposure to adjacent building, its grounds, and its occupants.
  - .4 Protect walls by means of tarpaulins where garbage chutes and hoisting equipment are located and operated.
  - .5 Cover dumpsters and bins to prevent debris from blowing away.
  - .6 Do not use spray installation methods on days with significant wind.
  - .7 Damage to adjacent buildings, grounds, and vehicles to be rectified by Contractor at no additional cost.
- .2 Adjacent Roof Areas and Completed Work:
  - .1 Take care not to damage any previously performed work or existing roofs.
  - .2 If work area is accessed across existing roof areas, provide protection to existing roof system. Use continuous Protection Walkways consisting of 19mm (0.75") plywood sheathing over 38mm (1.5") extruded polystyrene insulation.
  - .3 Protect newly installed roof work from traffic and damage using Protection Walkways where warranted by traffic requirements.
  - .4 Comply with any precautions deemed necessary by Consultant.
- .3 Material Storage:
  - .1 Deliver all materials to site in undamaged condition with original manufacturer's label intact and clearly visible for easy verification of specified materials.
  - .2 Provide security fencing at all times for equipment and materials stored at ground level.

- .3 Protect rolls from flattening by storing on ends on skids.
- .4 Whenever possible, store roof materials off roof at designated, protected storage area.
- .4 Structural Integrity of Roof:
  - .1 Use only equipment that will not adversely affect, damage, or alter roof deck.
  - .2 Do not create point loads that may adversely affect performance of existing deck when storing materials on roof.
- .5 Inclement Weather:
  - .1 Immediately halt work during inclement weather, including but not limited to rain fall, snow, drizzle, fog, and hail. Protect exposed building substrates, open building cavities, and moisture sensitive products.
  - .2 At end of each work day or when stoppage occurs due to inclement weather, provide suitable protection from elements for completed work and materials out of storage.
  - .3 Place in to heated storage any temperature sensitive materials such as membranes, adhesives, and sealants when temperature falls below 5 °C (40 °F).
  - .4 Protect all vents, stacks, drains and related deck openings from inclement weather and contamination from debris.
- .6 Roof Safety, Access, and Egress:
  - .1 Use warning signs and barriers. Maintain in good order until completion of work.
  - .2 Access to roof to remain unobstructed.
  - .3 Keep doorways and fire routes clean and clear of any obstacles.
  - .4 Protect and safeguard all man-size or larger openings in roof deck with warning flags and suitable temporary barriers or railings.
- .7 Damage and Defective Work:
  - .1 Avoid use on roof of any petroleum based and other chemical products that are corrosive and/or damaging to membrane. Provide protection to membrane from any accidental spills or drips. Any damage to roof system caused by non-compatible products to be cut out and replaced at no cost to Owner.
  - .2 Investigate and examine any damage caused by execution of Work for this contract, and repair or replace with new materials to match original finish. Restoration and repair work to be reviewed and approved by Consultant.
  - .3 Defective Work resulting from application of material on unsatisfactory surface or substrate to be rectified by Contractor at no additional cost.
  - .4 Defective Work resulting from improper installation of materials to be rectified by Contractor at no additional cost.

### **3.4 SURFACE PREPARATION**

- .1 Preparation:

- .1 Examine all roof decks and existing site conditions to ensure that they are in satisfactory condition for commencement of work in this section.
- .2 Divide work into logical sections and only tear-off as much existing roof as can be made watertight in same working day to prevent damage to building interior.
- .3 Prior to removal of any roof components, all existing openings (drains, vents, air intakes, etc.) to be covered or plugged to prevent any debris or contaminate from entering building below. All such coverings are to be removed at end of each working day and reinstalled prior to next day's start up.
- .4 Disconnect and reconnect Electrical Services and Mechanical Equipment as required.
  - .1 Rooftop equipment requiring disconnection to be responsibility of Contractor in consultation with Owner unless otherwise specified elsewhere in contract documents.
- .2 Existing Roof Removal:
  - .1 On Roof Area 2.5: Where directed on site, remove existing roof system components down to expose existing roof deck in preparation for installation of new roof system.
  - .2 On Roof Areas 2.6 and 2.7: Power vacuum existing B.U.R. membrane to remove loose gravel, debris, and dirt. Scrape high spots flush. Remove loose or debonded membrane flashings. Dispose of all debris to an appropriate site.
    - .1 Perform infrared thermal scan to determine location of wet and deteriorated sections of existing roof system to be cut out and replaced with new compatible materials. Mark-up findings on roof in logical rectangular shapes using paint.
  - .3 Remove only as much existing roof membrane and system components as called for by specifications, as indicated on drawings, and as directed on site to facilitate new retrofit roof installation.
  - .4 Dispose of all removed existing projection and perimeter metal flashings, ballast, gravel, roof membrane and flashings, insulation, vapour retarder and flashings, and old appurtenances. Remove items to an appropriate site for building material waste.
  - .5 Where directed on site, remove all unused and abandoned pitch pockets, vents, curbs, sleepers, projections, etc. from designated areas and disposed of.
- .3 Substrate Review:
  - .1 Exposed roof substrate surfaces to be reviewed by Contractor with Consultant. Ensure to review entire roof area to satisfy any warranty requirements of Manufacturer of new roof membrane system.
    - .1 Notify Consultant of review at least forty-eight (48) hours prior to site review.
  - .2 Where existing roof deck is exposed, surface of roof deck to be reviewed by Contractor and Consultant.
    - .1 Report any anomalies found that may impact soundness and structural integrity of roof system to Consultant and Owner immediately. Areas with damaged decking must be replaced or repaired before any further work may take place on that particular section.

- .2 Ensure roof decks are firm, straight, smooth, dry, free of snow, ice, frost, oils, or other contaminants. Decking must be properly cleaned of any dust and debris prior to proceeding with new installation. Test whether specified adhesion to deck will be obtained where required.
- .3 Prior to application of vapour retarder, examine deck and ensure any defect of level or construction is correct before proceeding with work.
- .4 Verify that roof drains have been installed at proper elevations relative to finished roof surface to allow for sufficient drainage of roof surface.
- .5 Review securement of existing projections and equipment (electrical conduit, gas lines, etc.). If inadequate securement is found, inform Consultant and halt work around that area until situation is rectified.
- .6 Examine securement of existing plywood sheathing, wood blocking, and cant strips. Do not install new roofing unless such items are adequately secured to withstand stresses imposed by thermal movement of new roofing components.

### 3.5 CARPENTRY

- .1 On Roof Areas 2.5, 2.6, and 2.7: Where required, install wood blocking, plywood, and cant strips to accommodate required slopes, insulation, roofing, and finish sheet metal. Any carpentry alterations will be performed to accepted trade practice.
- .2 Contractor to replace any seriously damaged or deteriorated wood at perimeters and projections with new construction grade spruce wood blocking or exterior grade, good one side plywood to match existing. Determination of suitability to re-use or replace existing wood to be at sole discretion of Consultant.
  - .1 Ensure existing wood blocking remaining at perimeters and curbs is securely fastened to existing substrate before installing any new blocking.
- .3 Wood to wood, wood to metal, wood to masonry or concrete to be secured at 305mm (12") on center staggered.
  - .1 Where possible, all fasteners to be flush or slightly sunk with surface of wood blocking being secured.
- .4 All wood blocking and plywood is to be considered part of roof, and to be made watertight by end of each working day to eliminate moisture infiltration into roof system.

### 3.6 LOCALIZED REPAIR OF EXISTING ROOF SYSTEM

- .1 On Roof Areas 2.6 and 2.7: After infrared thermal scan, review existing BUR membrane, cover board, insulation and vapour retarder underneath for any wet, damaged, or other otherwise deteriorated sections requiring removal and localized replacement with new compatible materials.
  - .1 All condition assessments of existing materials to be endorsed by Observer.
- .2 Neatly cut out sections of discovered wet and damaged sections of existing BUR roof system in logical rectangular shapes down to roof deck or as directed on site by Observer.
- .3 Clean and prepare exposed existing metal roof deck for new vapour retarder installation.
- .4 Apply one (1) ply of Kraft Paper with Kraft adhesive over exposed metal deck. Overlap and seal new Kraft Paper over existing vapour retarder a min. of 305mm (12") on all sides of repair area.

- .5 On Roof Area 2.6: Install new polyisocyanurate filler insulation to suit size of cut-out section. Secure in place with ribbons of polyurethane roofing adhesive. Thickness of new filler insulation to suit height of existing roof insulation system. Custom cut insulation boards as required to suit repair size with neat field cuts and tight fit.
  - .1 Reduce thickness of new polyisocyanurate insulation by 13mm (0.5”) to allow for provision of new gypsum cover board over cut-out repair areas.
- .6 Install new filler siliconized gypsum cover board over repair cut-out areas to suit height of adjacent existing roof system. Secure in place with ribbons of polyurethane roofing adhesive. Custom cut cover board panels as required to suit repair size with neat cuts and tight fit.
- .7 Prime top surface of new cover board filler panels and allow to dry and flash-off.
- .8 Over entire repair area install one (1) ply of self-adhered or torch applied modified bitumen base sheet membrane. Extend base sheet membrane minimum of 152mm (6”) over existing roof BUR membrane on all sides of repair section.

### 3.7 BASE INSULATION

- .1 On Roof Area 2.5: Install a continuous, loose laid layer of base insulation boards over prepared vapour retarder in accordance with insulation manufacturer’s instructions.
- .2 Do not install more insulation board than can be covered with membrane by end of work day or before onset of inclement weather.
- .3 Do not install warped, curled, damaged, or wet insulation boards.
- .4 Install base insulation boards in parallel rows and butt tightly together with joints staggered by one half board length.
- .5 Custom cut insulation boards as required at perimeters and projections to suit. Field cuts to be neat and provide tight fit around penetrations, projections, and at perimeters.
- .6 For uneven surfaces, trimming or slitting of boards may be necessary. Fill all gaps larger than 3mm (1/8”) with insulation slivers.

### 3.8 COVER BOARD

- .1 On Roof Areas 2.6 and 2.7: Install a layer of cover board panels in ribbons of polyurethane foamable roofing adhesive over restored BUR roof system as per manufacturer’s written instructions.
- .2 Do not use wet or damaged cover board panels. Panels must be dry for proper installation.
- .3 Determine and mark, as required, areas to receive new cover board installation to avoid over application of quick adhesive.
- .4 Custom cut cover board panels at perimeters and projections to suit. Install cover boards tightly together with no gaps between insulation boards larger than 3mm (0.125”).
  - .1 Cut boards as required to fit snug at all perimeters, walls, and roof projections.
  - .2 Cut straight lines using proper tools and snap chalk lines.
  - .3 Cut boards cleanly where slope changes direction. Do not break boards by stepping on them to acquire changes in deck slope.

- .5 Install cover board panels in parallel rows and butt tightly together with end joints staggered by a half width of panel. Stagger panel end joints with joints of rigid insulation below by min. 152mm (6").
  - .1 Install continuous ribbons of polyurethane adhesive in parallel lines to meet CSA A123.21 requirements. Use a "Z" pattern over an application area no larger than 3.66m (12'-0") at a time. Minimum securement pattern:
    - .1 Adhesive ribbons to be no less than 13mm (1/2") to 19mm (3/4") in width at time of application.
    - .2 Parallel rows of adhesive ribbons to be no more than 305mm (1'-0") apart in field of roof.
    - .3 Along 3.05m (10'-0") wide perimeter zones, rows of adhesive to be no more than 127mm (6") apart.
    - .4 Rows of adhesive to be no more than 102mm (4") apart in corner zones.
    - .5 Do not allow rising foam adhesive to skin over. Place roof board panels immediately into wet adhesive.
  - .2 Walk-in board panels to ensure positive adhesion to substrate across full panel. Repeat walk-in every five (5) minutes until insulation is firmly attached.

### 3.9 EPDM MEMBRANE: LOOSE-LAID & BALLASTED APPLICATION

- .1 On Roof Area 2.5: Overtop of new insulation substrate, loose lay a single ply of EPDM membrane with factory applied tape seams. Provide mechanically fastened EPDM reinforcement strips along base of walls, parapets, perimeters, and curb projections. Install EPDM membrane flashings at verticals, curbs, and projections in full application of adhesive and with splice tape.
  - .1 All membrane installation to be performed as per manufacturer's written guidelines and installation procedures. In case of conflict, most stringent procedures to apply.
  - .2 Minimize number of membrane seams required by using wider rolls where permissible for existing roof conditions. Membrane sheet overlaps to be shingle fashion with direction of water flow to avoid damming.
  - .3 All surfaces that are to come into contact with EPDM membrane shall be clean, dry, and free from any asphaltic contaminants prior to installation of new membrane system.
- .2 EPDM Membrane Sheets, Loose-Laid Application:
  - .1 Unroll membrane without stretching, over prepared substrate leaving sufficient membrane for tie-ins at roof perimeters, walls, curbs, and along sheet seams.
    - .1 Allow membrane to relax for a minimum of 30 minutes before attaching or splicing.
    - .2 During cold weather application, smaller panels should be used to minimize number of folds (larger EPDM panels have factory folds which may take longer to properly relax).
  - .2 Set placement of membrane sheet in final position allowing for minimum overlap width of 76mm (3") between sheets.
  - .3 At perimeters, walls and curbs where EPDM membrane will not be carried fully up and over vertical surfaces, ensure a min. membrane upturn of 102mm (4").

- .3 EPDM Membrane Sheets, Seaming Procedure:
  - .1 Position and fold back lap edge:
    - .1 Position membrane at seam area by overlapping membrane 102mm (4") for 76mm (3") seam tape, 178mm (7") for 152mm (6") seam tape.
    - .2 Once membrane is in place, mark bottom membrane with chalk 6mm (0.25") to 13mm (½") from edge of top membrane every 1.2m (4') to 1.8m (6') as a guideline.
    - .3 Temporarily tack membrane back with primer as necessary to hold back membrane while working at splicing area.
  - .2 Apply primer to seam area:
    - .1 Remove excess amounts of dusting agent on membrane and at factory splices using a stiff push broom. Ensure there is no contamination of bonding adhesive in tape area.
    - .2 Stir primer thoroughly before and frequently during use.
    - .3 Apply primer uniformly at least 25mm (1") wider than seam tape application area, using long back and forth type strokes with pressure along length of splicing area until surfaces become dark gray in colour. Do not over work primer.
    - .4 Additional scrubbing is required at all factory seams and at areas that may have become contaminated or have excess amounts of dusting agent in creases.
    - .5 Allow primer to dry, check using touch-push test.
  - .3 Apply seam splice tape:
    - .1 Along sheet edges without factory applied seam tape, immediately roll splice tape in with a 38mm to 51mm (1.5" to 2") wide silicone hand roller or a clean scrubber pad and handle after allowing primer to properly dry.
  - .4 Position membranes, check splice tape alignment:
    - .1 Place edge of top membrane to rest on bottom membrane with tape's release backing still in place.
    - .2 Proper alignment of seam tape will leave continuous 6mm (0.25") wide edge of splice tape exposed at completion of EPDM seam.
  - .5 Remove release backing:
    - .1 Make any adjustment or correction required for final alignment of top membrane sheet edge over bottom membrane sheet, prior to removal of release paper.
    - .2 Peel release paper backing off of splice tape by pulling against weight of EPDM panel (away from top sheet) at approximately a 45° angle to tape and parallel with roof surface.
    - .3 Broom entire length of seam at a 45° angle as release paper is being removed.
  - .6 Roll seam: Use roller appropriate for application:



- .1 Use roller with 600mm to 900mm (2' to 3') long strokes working from one side of seam to other, along seam length
- .2 Use 38mm to 51mm (1.5" to 2") wide silicone hand roller, first across width of seam, and then along entire length and width of seam.
- .7 Factory laps, end laps, "T" joints, transition patches, and others:
  - .1 End laps of tape: When seam is greater in length than tape, adjoining splice tape must be overlapped a minimum of 25mm (1").
  - .2 Trim splice tape at "T" joints: Trim splice tape so that edge of splice tape and edge of membrane are flush beneath "T" joint area.
  - .3 "T" joints: Apply a section of flashing or joint cover over "T" joint area.
  - .4 Use splice tape with cured EPDM as flashing: Apply flashing with splice tape and cover with primed membrane or section of joint cover over intersection of flashing and field seams.
- .8 Temporary Seals:
  - .1 Install temporary seals at edges of all incomplete membrane work at end of each day as specified by membrane manufacturer. Remove seals when work resumes by cutting out contaminated membrane and disposing of to an appropriate site.

### 3.10 EPDM MEMBRANE: FULLY ADHERED APPLICATION

- .1 On Roof Areas 2.6 and 2.7: Over new cover board, install new EPDM membrane with primer, splice tape, continuous membrane adhesive, and EPDM reinforcement strips at vertical transitions. Include lap sealant at edge of membrane where required by manufacturer.
- .2 Remove any dusting agent or dirt that may have accumulated with cleaner or primer.
- .3 Around perimeters and large rectangular projections, incorporate use of 6" (152mm) wide EPDM reinforcement strips with factory applied splice tape.
  - .1 Reinforcement strips shall be mechanically secured with accessory mounting screws and seam plates at max. 305mm (12") on centre, or less where required by manufacturer.
- .4 Apply bonding adhesive over clean, prepared perimeter or wall substrates using either a 229mm (9") wide solvent-resistant paint roller, power roller, or a commercial-grade adhesive sprayer.
  - .1 Adhesive to be applied in a uniform thickness to surfaces of both prepared substrate and EPDM membrane flashing at approximately same time at a rate of 0.82L/m<sup>2</sup> (2 gallons/100ft<sup>2</sup>).
  - .2 Adhesive to be applied in smooth, even coating with no gaps, globs, puddles or similar inconsistencies.
  - .3 Allow bonding adhesive to flash-off properly. Touch adhesive surface in several locations with a clean, dry finger to be certain that adhesive does not stick or cause strings. As adhesive is been touched, push forward on adhesive at an angle to ensure that adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when finger is lifted, adhesive is not ready for mating.
- .5 Apply EPDM membrane flashing and carry up vertical surfaces and over perimeter details in full coverage application of bonding adhesive.

- .6 At Roof Perimeters and Parapets: Edge of EPDM membrane flashing to extend down outside face of exterior perimeter walls covering all exposed wood blocking.
  - .1 Tack loose membrane edge at exterior face to wood blocking with fasteners to hold EPDM edge in place prior to installation of new continuous metal hook strips.

### 3.11 EPDM ACCESSORY FLASHING INSTALLATION

- .1 Install roof drains, vent stack flashings, support flashings and other roof penetration flashings and seal with membrane in accordance with manufacturer's specifications and as indicated on detail drawings.
- .2 Semi-rigid penetrations require installation of rigid flashings: IRC copper gooseneck detail, IRC doghouse detail, or suitable spun aluminum flashing, to suit each penetration.
- .3 Existing fixed, rigid penetrations may be flashed-in using EPDM boots where approved by membrane manufacturer and meeting warranty requirements.
- .4 Prime all metal flanges with appropriate primer and allow solvents to flash off prior to installation.
- .5 Set metal flange in full layer of rubberized splicing adhesive and seal to E.P.D.M. membrane ensuring a positive bond.
- .6 Using rubberized splicing adhesive, install E.P.D.M. membrane flashing across metal flange, staying short of curved metal section, and running on to flat of roof a minimum of 6".
- .7 Apply a continuous bead rubberized lap sealant along terminating edge of membrane flashing and metal sleeve. Apply a second continuous bead along intersection of membrane flashing at flat of roof membrane.

### 3.12 ROOF DRAINS

- .1 General Practice:
  - .1 Ensure existing roof drains, rain gutters, and down pipes are clear of debris and are free flowing prior to installation of new roof system.
    - .1 Any blockages are to be reported prior to start of Work. Once Work has begun, Contractor assumes responsibility for free flowing drains and clearing blockages at no additional cost to Owner.
    - .2 Where required for new roof drains and interior plumbing, Contractor to provide interior plumbing and hook-up to existing storm water drainage system and co-ordinate installation of same with Owner.
  - .2 Prior to installation of new roof, ensure that all drains are located at a height where new roof system is able to clear majority of roof top water caused by rainfall within a seventy-two (72) hour period.
  - .3 Once work has begun, no roof area to be left overnight without adequate provision for drainage.
  - .4 Install drains in accordance with detail drawings and as per manufacturer's written instructions and guidelines.
- .2 Drain Installation:
  - .1 On Roof Areas 2.5 and 2.6: Drain body insert to be secured to substrate with min. four (4) fasteners per drain as required to properly secure drain body.

- .1 At all existing roof drains employing control flow weir devices, it is mandatory to reinstate existing devices or provide new control flow devices with equivalent flow rates inside new roof drains.
- .2 Affix U-Flow connector seal to bottom of drain stem before insert retrofit drain body down into existing storm drainage pipe.
- .2 Install additional EPDM membrane flashing and sealant at drain flanges, either:
  - .1 Install target patch of EPDM membrane reinforcement under roof drain flange area with EPDM field membrane adhered overtop of flange area.
  - .2 OR install field EPDM membrane under roof drain flange area with prefabricated EPDM drain flashing with factory laminated tape seam, installed over top of drain flange and sealed to field membrane.
- .3 Set metal flange of drain body into continuous bed of manufacturer recommended and system compatible roofing cement applied EPDM field sheet membrane.
- .4 Install new EPDM target patch flashing centered over drain and flange in full application of membrane adhesive. Use manufacturer recommended EPDM pre-taped accessory flashing for drains or provide lap sealant around drain flashing.
- .5 Mechanically secure drain body to deck and substrate with min. four (4) fasteners per drain through drain flange or by underdeck clamping ring.
- .6 Place Clamping Ring over raised bolt studs. Install stainless steel self locking nuts to tighten Clamping Ring against membrane flashings until secure.
- .7 Install ballast guard strainer dome and secure with cotterless pin or wing nut screw.
- .3 Scupper Drain Installation:
  - .1 On Roof Area 2.7: Install new metal scupper drain at existing perimeter location indicated on roof plan.
  - .2 Install open-top scupper drain to suit height of finished perimeter detail:
    - .1 New open-top scuppers to be min. 102x102mm (4"x4") fabricated from 24 gauge galvanized metal to suit and complete with gravel stop edge on three sides of flange, set at inside face of parapet.
  - .3 Solder all joints to make continuous water tight seal. Outer face of scupper penetrating through or beyond parapet/perimeter to be encapsulated with prefinished metal cover.
  - .4 Scupper Drain Downpipe: Affix prefinished metal 102x102mm (4"x4") downpipe to new scupper drain or collector head. Determine suitable location for downpipes and kick-outs on site with Consultant.
    - .1 Downpipe to have open-slotted face starting after first 1.2m (4'-0") of fall.
    - .2 Use heavy duty securement straps no more than 2.4m (8') apart and with a minimum of two (2) straps per downpipe.

### 3.13 MEMBRANE PROTECTION MAT

- .1 On Roof Area 2.5: Where existing stone ballast is reused or delivery of new river washed round stone ballast is unavailable due to a lack of supply, loose lay a continuous protection mat over new EPDM membrane system before installation of non-rounded stone ballast.

- .2 Install protection mat following manufacturer's installation guidelines.
- .3 Overlap all side and end laps of protection mat by minimum 305mm (1'-0"). Stagger and offset all joints and laps.
- .4 Turn protection mat up vertical surfaces at perimeters and roof curbs by minimum 51mm (2.0") to suit depth of stone ballast.

### 3.14 BALLAST

- .1 On Roof Area 2.5: Install over new insulation and protection mat, new stone ballast comprised of 38mm (1.5") to 51mm (2") diameter clean, round stone with not more than 10% out of specified size range.
  - .1 Ballast to conform to ASTM D448 No. 4. Submit a 4.54 kg (10 lb) sample of proposed ballast to Observer for review and endorsement prior to delivery of full load to job site.
  - .2 Contractor will absorb all costs associated with shipment and return of improper and/or inappropriate ballast.
- .2 DO NOT STRUCTURALLY OVERLOAD ROOF DECK BY PLACING STONE BALLAST AND CONCRETE PAVERS IN LARGE PILES.
  - .1 Only lift to roof amount of stone ballast that can be installed on same day.
  - .2 Ensure ballast weight is adequately distributed across roof at all times or temporarily remove ballast from roof and store at ground level setup area.
  - .3 Immediately separate and reorganize concrete pavers from stacked pallets hoisted or carried to roof and spread out Dead Load.
- .3 Broadcast a continuous layer of new stone ballast over roof membrane at an application rate of 58kg/m<sup>2</sup> (1200 lb/100 ft<sup>2</sup>).
- .4 Apply and rake out stone layer evenly, leave no gaps in ballast layer with field membrane exposed.

### 3.15 MISCELLANEOUS MECHANICAL & ELECTRICAL

- .1 Unless stated in writing elsewhere, Contractor responsible for all Mechanical and Electrical Work required to perform complete installation of new roofing. Any and all costs associated with HVAC disconnection, removal, and reconnection, including modification of gas and conduit lines, to be included in Bid Pricing, unless specified otherwise on Bid Form.
  - .1 Co-ordinate roofing work, if applicable, with General/Prime Contractor and other Sub-Contractor trades that may be present on roof.
  - .2 Coordinate any planned disruptions in advance with Owner to minimize inconvenience.
- .2 HVAC and Rooftop Equipment: Disconnect, lift (if necessary), modify, and reconnect all Heating, Ventilation, Air Conditioning, and Mechanical units as required to for new roof system.
  - .1 Modify existing sleepers, curbs, and supports as required to suit new roof system installation and configuration as detailed. Ensure modified sleepers, curbs, and supports are made watertight with new membrane and flashings as required.
  - .2 Remove and dispose of identified and designated abandoned, redundant, and unused HVAC equipment from roof and worksite.

- .3 Gas Lines and Conduits: Disconnect, modify, and reconnect all gas lines, electrical lines, and conduits as required to suit new roof installation height and configuration of projection detailing.
  - .1 All gas line work must be performed by a qualified Gas Fitter and must conform to requirements of CSA B149.1-10.
  - .2 Re-install gas lines and conduits at a height of 150mm (6") to 200mm (8") above finished roof surface. Secure all loose cabling and conduits off surface of roof membrane.
  - .3 Ensure that all gas line penetrations are separated from all electrical line penetrations with their own roof flashing supports. Provide any new sleeves, goosenecks, or curbs required using IRC Group approved flashing supports and installation methods.
  - .4 At threaded gas line piping, which cannot be permanently enclosed or covered, construct new insulated and waterproof dog house detail with removable lid for periodic thread inspection.
  - .5 Paint all gas lines on areas of roof work with exterior grade, yellow paint for metal surfaces; Rust Paint by Tremclad or IRC Group approved equivalent.
- .4 Underdeck Securement: Where existing sections of roof decking are to be removed, ensure any cabling, conduits, and attachments (plumbing, electrical wiring, lighting fixtures, etc.) secured to underside are disconnected, removed, and relocated. Notify Owner's Representative, if necessary, to have interior services disconnected, removed, and relocated by Owner.
- .5 Temporary Security: Provide overnight security, at no additional cost to Owner, where removal of any venting or HVAC equipment results with an opening in roof deck that cannot be permanently sealed on same day. Security company must be preapproved by both Owner and Consultant in advance.

### 3.16 METAL FLASHINGS

- .1 On Roof Areas 2.5, 2.6, and 2.7: After installation of roof membrane and membrane flashings, new perimeter metal and metal flashings to be installed as detailed in Section 07620 and as indicated on detail drawings.

### 3.17 SEALANTS

- .1 On Roof Areas 2.5, 2.6, and 2.7: After installation of roof membrane and membrane flashings, install sealants as per Section 07920 – Sealants and as recommended by membrane manufacturer.

### 3.18 TEMPORARY WATER CUT-OFFS

- .1 All membrane flashings to be installed concurrently with roof membrane in order to keep roof system watertight during performance of work.
- .2 Temporary waterproof seals to be placed on daily work as required. All temporary water-stops to be constructed to provide a one hundred (100) percent watertight seal.
- .3 New roofing membrane to be carried into water-stop. Water-stop to be sealed to roof deck and/or substrate to prevent water travel and infiltration under new or existing roofing.
- .4 Edge of roof membrane to be sealed in a continuous heavy application of sealant. Temporary seals to be removed and cleaned up before proceeding with remaining work.

- .5 When work resumes, cut out and dispose of all contaminated membrane. All sealant, contaminated membrane, insulation fillers, etc. to be removed from work area and properly disposed of offsite. Reuse of these materials in new work is strictly prohibited.
- .6 If inclement weather occurs while a temporary water-stop is in place, Contractor to provide all necessary labour required to monitor situation and maintain watertight condition.
- .7 If any water is allowed to penetrate under newly completed roofing, then affected area to be cut out, removed, and replaced with new materials at Contractor's own expense.

### **3.19 CLEAN-UP**

- .1 On Roof Areas 2.5, 2.6, and 2.7: Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.
- .2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.

**END OF SECTION - 07531**

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## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Supply and installation of new prefinished sheet metal flashings and counter flashings to complete roof system installation. Unless specifically indicated otherwise, all references to Sheet Metal Flashings in specifications and drawings to refer to new prepainted steel.
- .2 Form, break, and install metal flashings to suit perimeter and projection details as specified and as shown on detail drawings.
- .3 Coordination of all work in this section with other sections and trades as required to ensure proper installation of specified components.

### **1.2 RELATED SECTIONS**

- .1 Section 02225 – Selective Demolition & Removal
- .2 Section 07531 – EPDM Membrane Roofing
- .3 Section 07920 – Joint Sealants

### **1.3 REFERENCES**

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
  - .1 American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI):
    - .1 ES-1: Wind Design Standard for Edge Systems (Low Slope Roofing).
    - .2 American Society for Testing and Materials (ASTM):
      - .1 A606: Steel Sheet, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
      - .2 A653/A653M: Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
      - .3 A792/A792M: Steel Sheet, 55% Alum-Zinc Alloy-Coated by Hot-Dip Process.
  - .2 Canadian Standards Association (CAN/CSA):
    - .1 B111: Wire Nails, Spikes and Staples.
  - .4 Canadian General Standards Board (CAN/CGSB):
    - .1 51.32M: Sheathing, Membrane, Breather Type.
    - .2 93.1-M: Sheet, Aluminum Alloy, Prefinished.
  - .5 Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
    - .1 Architectural Sheet Metal Manual
  - .6 Ontario Industrial Roofing Contractors Association (OIRCA): Roofing Manual.
  - .7 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

### **1.4 SUBMITTALS**

- .1 Warranty: Provide Owner with a Material and Workmanship Warranty for sheet metal flashing work on Contractor's letterhead, signed and authorized.



- .2 Compatibility: Provide written certification to Consultant stating that materials and components of roofing system and wall system, as assembled in system are compatible.
- .3 Mock-ups: Create mock-up sample of typical metal flashing detail and related accessories for review by Consultant.
  - .1 Provide any additional mock-up samples as reasonably requested by Consultant.
  - .2 Finished and approved mock-ups to remain as example of standard to be met, and may remain in place as part of installed and completed work.

## 1.5 CONTRACTOR QUALIFICATIONS

- .1 Contractor and his staff must be certified by membrane Manufacturer and be pre-approved by Owner and Consultant.
- .2 Contractor must be a member in good standing with Ontario Industrial Roofing Contractors Association (OIRCA) and have a minimum ten (10) years relevant experience with similar roof materials.

## 1.6 STORAGE AND HANDLING

- .1 Do not store metals in direct contact with earth, road surface, roof deck, or other metals.
- .2 Place suitable supports or pallets under metal stock upon delivery. Protect metal from scratches, dents, punctures, and moisture.
- .3 Store caulking and sealants at +5°C minimum.
- .4 Handle and store products in a manner to prevent damage, oxidization, and deterioration.
- .5 Remove and replace damaged products at own expense and to satisfaction of Quality Assurance Observer/Consultant.
- .6 Apply materials in accordance with Manufacturer's recommendations.

## 1.7 SAFETY AND PROTECTION

- .1 References:
  - .1 CAN/CSA S269.2M: Access Scaffolding for Construction Purposes.
  - .2 FCC No. 301: Standard for Construction Operations.
  - .3 Comply with all safety requirements as per current printed edition of OHSA, and with OIRCA standards.
- .2 Solvents, Adhesives and Membranes
  - .1 Store only enough solvents and adhesives on roof for same day's use.
  - .2 Manufacturer supplied adhesives should be stored in their overnight containers. Minimum temperature for solvent based adhesives and primers is -5°C.
- .3 Hoisting:
  - .1 Protect walls and roof perimeters where hoisting is required.
  - .2 Protect roofs from damage due to traffic and material handling until completion of project.

## 1.8 WARRANTY

- .1 Sheet Metal Flashings:
  - .1 Two (2) year Material Warranty and one (1) year Workmanship Warranty.

## 1.9 QUALITY ASSURANCE OBSERVATION

- .1 IRC Building Sciences Group, hereafter known as “Observer”, is an independent Quality Assurance Observation agency appointed by Owner to observe installation of sheet metal flashing Work:
  - .1 Arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer’s instructions and reference procedures to be followed on project.
  - .2 Provide to Observer date when work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
  - .3 Arrange Final Review of installed work with QA Observer, and where required with membrane Manufacturer’s technical representative.
- .2 Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.
- .3 When required, provide cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.
- .4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.
- .5 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

## 1.10 PREPARATORY WORK

- .1 Examine drawings and specifications and any other necessary data which may affect installation to determine extent of Work involved in this Section. No additional claims against Owner to be allowed resulting from failure to ascertain full extent of Work required as described or implied.
- .2 Prior to application of flashings, review roof perimeters and projections.
- .3 Examine installed membrane flashings for any defect of level or construction before proceeding with work.
- .4 Advise Consultant of any deficiencies that may affect performance of roof system and any deviations from specified tolerances.
- .5 Defective or improper work must be corrected before proceeding with installation of sheet metal flashings.

## PART 2 - PRODUCTS

### 2.1 PRE-FINISHED METAL FLASHINGS

- .1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.
- .2 Prefinished Metal Flashing: 24 gauge (0.026” or 0.66mm) steel with G90 (Z275) zinc coating conforming to ASTM A653A/A653M. Surface with Dofasco Perspectra Series or Valspar

WeatherX factory-baked finish. Colour selected by Owner from Manufacturer's standard colour range.

- .3 Cleats and Hook Strips Not Otherwise Specified: Two gauges heavier of material matching that of flashing being employed; minimum 22 gauge (0.032" or 0.82mm).

## 2.2 JOINTING

- .1 Linear mating of sections of cap flashings and parapet flashings to be with an "S" lock joint.
- .2 Corner mating to be completed with a standing seam.

## 2.3 ACCESSORIES

- .1 Underlay: Smooth unsaturated quality rosin sized paper weighing not less than 0.3 Kg/m<sup>2</sup> (6 lbs per 100 ft<sup>2</sup>) unless otherwise shown to CSA A123.3M.
- .2 Joint Filler: Extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 210 kilopascals (20 to 30 psi), 25% to 30% wider than joint to be caulked.
- .3 Touch-up paint: As recommended by pre-finished material manufacturer.
- .4 Bituminous Paint: Gilsonite asphalt 910-02 by Bakelite to CGSB 1-GP-108 Type II.
- .5 Sealants: as per Section 07920.

## 2.4 FASTENERS

- .1 Use galvanized, copper, aluminum or stainless steel nails or screws most compatible with materials being employed. Use fasteners as most generally suitable to not cause a galvanic reaction.
- .2 Fasteners to Wood: Nails, annular threaded of length to penetrate into bases minimum 1" (25 mm) or No. 8 screws to penetrate surface by min. 19 mm (0.75"), at 600 mm (24") o.c.
- .3 Exposed Fasteners: Nylon headed, No.14 Colormate fasteners by Leland Industries with 11mm (7/16") hex heads, self tapping or drilling point tips. Length to suit installation and with colour to match pre-painted metal.
- .4 Masonry Fasteners: Tapcon, Gripcon or Rawl spike sized to penetrate concrete 38mm (1.5") minimum unless otherwise shown.
- .5 Wedges: Rolled plumber sheet lead. Secure metal flashings on inside and should be secured with No.10 galvanized screws through neoprene washers at 760 mm (30") o.c.
- .6 Masonry Anchors: Rawl lead lags for screws as recommended by manufacturer.
- .7 Pop Rivets (Only where approved by Consultant): 3mm (0.125") shank diameter, all stainless steel, blind pop rivets meeting ASME/ANSI B18.1.1. Head diameter to be 6mm (0.25") and with a grip range of 4.7mm to 6.4mm (0.1875 to 0.25"). Body and mandrel to be constructed from high-shear, 300 series stainless steel.

## 2.5 FABRICATION

- .1 Fabricate all possible work in shop in 2.4m (8') lengths by brake forming, bench cutting, drilling and shaping. On high vertical sections install metal in 1.2m (4') section as specified and detailed. Profiled metal to be cold rolled.
- .2 On coping or flashing with a horizontal dimension of 406mm (16") or greater, fabricate metal flashings in maximum 1.2m (4') sections.

- .3 On coping or flashing with a horizontal dimension of 508mm (20") or greater, use 25mm (1") lock folded standing seam joints.
- .4 Form bends with straight sharp lines, angles and corners into true planes, free from twists, buckles, dents and other visual distortions.
- .5 Double-back exposed metal edges at least 13mm (0.5"). Raw edges will not be permitted.
- .6 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same materials to which they will be used.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- .1 Install sheet metal flashings at copings, walls, joints, roof openings and other components required to protect membrane flashings as shown on drawings, or otherwise required.
- .2 Install continuous concealed hook strips at all exterior faces. Install cleats as required to protect membrane roofs and flashings from damage at lock joints and as required to permanently hold flashing in place. Secure cleats at 152mm (6") on center in V-pattern, keeping lower fastener within 32mm (1.25") of drip edge.
- .3 Sheet metal work to be installed to cover entire area it protects and to be watertight under all service and weather conditions.
- .4 Install in a uniform manner, level, true to line, free of dents, warping and distortion.
- .5 Back-paint at rate of 0.12L/m<sup>2</sup> (¼ Gal/100 ft<sup>2</sup>) with bituminous paint, sheet metal that comes into contact with another kind of metal, masonry or concrete.
- .6 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will be permitted only with approval of Consultant. Space all fasteners evenly in an approved manner. Use lead plugs and screws where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete or masonry.
- .7 Install underlay under sheet metal, installed directly over wood or masonry surfaces. Overlap joints 51mm (2") and turn up 76mm (3") at edges where horizontal surfaces intersect vertical planes.
- .8 Join sheet metal by "S" lock seams, to permit thermal movement. Space joints evenly where exposed. Form inside and outside corners by means of raised seams. Lock seams to ensure water tightness. Do not use pop rivets.
- .9 Slope all metal to interior to maintain minimum 8% slope. Do not form open joints or pockets that fail to drain water.
- .10 Caulk all open sheet metal joints. Solder corners and other locations as required for a permanent waterproof connection.
- .11 Where existing reglets can not be reused, provide new reglets sized minimum 10mm (3/8") wide, 25mm (1") deep and to suit site conditions.
- .12 Clean reglets free of contaminates and dust.
- .13 Wedge flashings into reglet joints with lead wedges at 229mm (9") o.c. set minimum 6mm (¼") from masonry surface.

- .14 At reglets wider than 10mm (3/8") and deeper than 19mm (¾") provide polyethylene rod, 25% wider than joint width. Caulk all reglets to provide a continuous waterproof seal. Use colour to match materials. Conform to manufacturer's latest printed recommendations for use of products being employed.
- .15 Carry flashings out onto roof minimum 76mm (3").
- .16 Prepare mock-up installations of metal flashing details for approval by QA Observer prior to installation of sheet metal flashings.

### **3.2 FINISH**

- .1 At project's conclusion, leave surface and adjacent work areas free of damage and clean of debris. Finished surfaces of formed metal flashings to be free of oil canning, dents and be perfectly colour matched.
- .2 Changes in colour between sheets and dented or oil canned surfaces that detract from visual appearance of finished product will be rejected. Remove and replace damaged, defaced or defective work.
- .3 Paint all exposed metal due to cutting.
- .4 After erection touch-up finish surfaces damaged during handling and erection in conformance with manufacturer's recommendations. Refinish shop applied finishes as approved by Consultant.
- .5 Remove deposits or protections and wash metals left unpainted and exposed to view as specified by metal manufacturer.

### **3.3 CLEAN-UP**

- .1 Daily as work proceeds and on completion, remove all surplus materials and debris resulting from foregoing work.
- .2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.
- .3 Remove all stains, caulking or other adhesive from all affected surfaces.

**END OF SECTION - 07620**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 02225 – Selective Demolition & Removal
- .2 Section 07531 – EPDM Membrane Roofing
- .3 Section 07620 – Prefinished Sheet Metal Flashing & Trim

### **1.2 REFERENCES**

Latest edition of all listed references to apply:

- .1 ASTM C920 – Elastomeric Joint Sealants
- .2 CAN/CGSB-19.13 – Sealing Compound, One-component, Elastomeric, Chemical Curing
- .3 Sealants: Professionals' Guide, Sealant, Waterproofing and Restoration Institute
- .4 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification

### **1.3 QUALITY ASSURANCE OBSERVATION**

- .1 Observation of work will be carried out by designated QA Observer.
- .2 Prior to mobilizing on site, prepare and install sealant samples for adhesion testing, a minimum of two (2) samples for each substrate combination, according to manufacturers written guidelines. Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of material will result. Testing to be completed prior to mobilization on site. Do not proceed with Work until samples have been approved.
- .3 Adhesion tests on new sealant will be performed at random locations at discretion of Owner's representative. Any work that is found to be sub-standard, is to be removed and replaced at no cost to Owner. Contractor is to assist with sealant adhesion tests as directed.
- .4 Execute Work of this Section by Subcontractors approved by manufacturers of materials incorporated in Work; who has equipment, adequate for Project, and skilled tradesmen to perform it expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of at least immediate past five years.
- .5 Remove sealant and re-caulk disapproved joints.
- .6 Approved joints will establish minimum acceptable quality of workmanship and will serve as standard by which subsequent Work will be compared for Acceptance.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact.
- .2 Protect from freezing, moisture, water and contact with ground or floor.

### **1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to local Labour regulations.

- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

## 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Place materials defined as hazardous or toxic waste in designated containers.
- .2 Ensure emptied containers are sealed and stored safely for disposal away from children.
- .3 Dispose of surplus chemical and finishing materials in accordance with federal regulations.
- .4 Fold up metal banding, flatten, and place in designated area for recycling.
- .5 Use trigger operated spray nozzles for water hoses.
- .6 Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.
- .7 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.
- .8 Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.
- .9 Place used hazardous sealant tubes and other containers in areas designated for hazardous materials.

## PART 2 - PRODUCTS

### 2.1 SEALANT MATERIALS

- .1 Sealants and caulking compounds must:
  - .1 meet or exceed all applicable governmental and industrial safety and performance standards.
  - .2 be manufactured and transported in such a manner that all steps of process, including disposal of waste products arising therefrom, will meet requirements of all applicable governmental acts, by laws and regulations.
- .2 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .3 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant to not be used in or near air handling units.

### 2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Acceptable single component neutral cure silicone sealants for skylight related work include:
  - .1 CWS by Dow Corning; or
  - .2 795 by Dow Corning
- .2 Acceptable single component, moisture curing, polyurethane sealants for reglets and other roofing related flashing termination work include:

- .1 Dymonic by Tremco.
- .3 Butyl (for concealed skylight related sealant joints): Tremco Curtainwall Sealant or approved alternate.
- .4 Primers:
  - .1 Primers to be as recommended by sealant manufacturer.
- .5 Cleaners:
  - .1 Acceptable cleaners:
    - .1 Dow Corning Primer/Surface Prep Solvent,
    - .2 Methyl ethyl ketone (MEK)
    - .3 Isopropyl Alcohol
  - .2 Surfaces to receive silicone sealants to not be cleaned with Xylo.
  - .3 All substrate materials to be cleaned with compatible cleaners.
- .6 Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene:
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 30 to 50 %.
  - .2 Bond Breaker Tape.
    - .1 Polyethylene bond breaker tape.
- .7 Compatibility: All materials in a sealant system to be compatible with each other, with substrate and any coating or waterproofing to be installed. sealants used with elastomeric coating or waterproofing systems must be approved by coating or waterproofing manufacturer.

## 2.3 JOINT PRIMER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant. Primer as recommended by sealant manufacturer.

## PART 3 - EXECUTION

### 3.1 PROTECTION

- .1 Protect existing facades from staining or contamination.
- .2 Protect public from falling debris during installation.
- .3 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage. At no time shall unsealed joints be left open. If protection is required, then entire drop/bay to be adequately protected.



### 3.2 EXAMINATION

- .1 Before commencing Work, verify that joint configuration and surfaces have been provided as specified under Work of other Sections to meet intent of sealant Specification, that joint conditions will not adversely affect execution, performance or quality of completed Work and that they can be put into acceptable condition by means of preparation specified in this Section. Verify Site conditions together with manufacturer's representative of sealant to be applied.
- .2 Examine existing conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for finished condition of work.
- .3 Ascertain that sealers applied to sealant substrates are compatible with sealant used and that full bond between sealant and substrate is attained. Request samples of sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
- .4 Examine sealant configuration for width and depth. Depth of joint should be 1/2 joint width with a minimum depth of 6mm (0.25") and a maximum depth of 13mm (0.5") unless specified otherwise. For fillet joints, a minimum of 6mm (0.25") adhesion between sealant and substrate must be achieved on both sides of joint unless specified otherwise.
- .5 Defective work resulting from application to unsatisfactory joint conditions will be considered responsibility of those performing work of this section.

### 3.3 SURFACE PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's directions.
- .2 Before any sealant repairs are made, type of existing sealant to be determined. If uncertain as to type, then a sealant manufacturer technical representative to be contacted to confirm type. Only sealant compatible with existing to be installed as part of repairs. Urethane based sealants are not to be applied over existing silicone sealants.
- .3 Where existing, remove sealant completely. In no case shall new sealant be applied over old. In addition:
  - .1 Remove existing sealants, dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, shall components be damaged during surface preparation.
  - .2 Clean substrates with recommended solvent cleaner. Apply solvent with a clean cloth, pad or soft paper towel. Applicator cloth or towel to not leave fiber residue on substrate surface. Surface should be wiped clean and dried with a second clean cloth to ensure removal of contaminants. If substrate surfaces is still not clean, repeat procedures as needed. Change cloths frequently to prevent depositing contaminants from cloth onto substrate surface.
  - .3 Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.
- .4 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .5 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .6 Ensure joint surfaces are dry and frost free.

- .7 Remove loose particles present or resulting from routing by sweeping particles out with a dry brush, blowing out joints with oil free compressed air or by vacuuming joints prior to solvent cleaning.

### **3.4 PRIMING**

- .1 Where necessary to prevent staining or for neat appearance, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.
- .3 Use only primer approved by sealant manufacturer for particular installation, applying in strict accordance with manufacturers printed recommendations.
- .4 Always pour primers onto rag or brush, do not dip rag or brush into container.
- .5 Prime only as much area that can be packed and caulked in a single day.
- .6 Do not apply excess primer, and apply primer only to areas which it will be contacted by sealant.

### **3.5 BACKUP MATERIAL**

- .1 Apply bond breaker tape where installation of backer rod is not possible, three point adhesion needs to be eliminated or throat to width ratio needs to be created as per manufacturers recommendations.
- .2 When using backing material comprised of tubular or rod stock, avoid lengthwise stretching of material. Do not twist or braid backer material.
- .3 Provide a stiff blunt-surfaced wood or plastic installation tool, having shoulders designed to ride on finished surface and a protrusion of required dimensions to assure a uniform depth of backup material below sealant. Do not puncture exterior skin or surface of backer material. A screwdriver is prohibited for use on this project.
- .4 Using approved tool, smoothly and uniformly place backup material to depth indicated on drawings or otherwise required, compressing backer material 25% to 50% and securing a positive fit.
- .5 Install backing material to a depth to provide a caulked joint meeting depth requirement as set out in sealant manufacturer's specifications.

### **3.6 MIXING**

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

### **3.7 APPLICATION**

- .1 Sealant:
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exist to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.

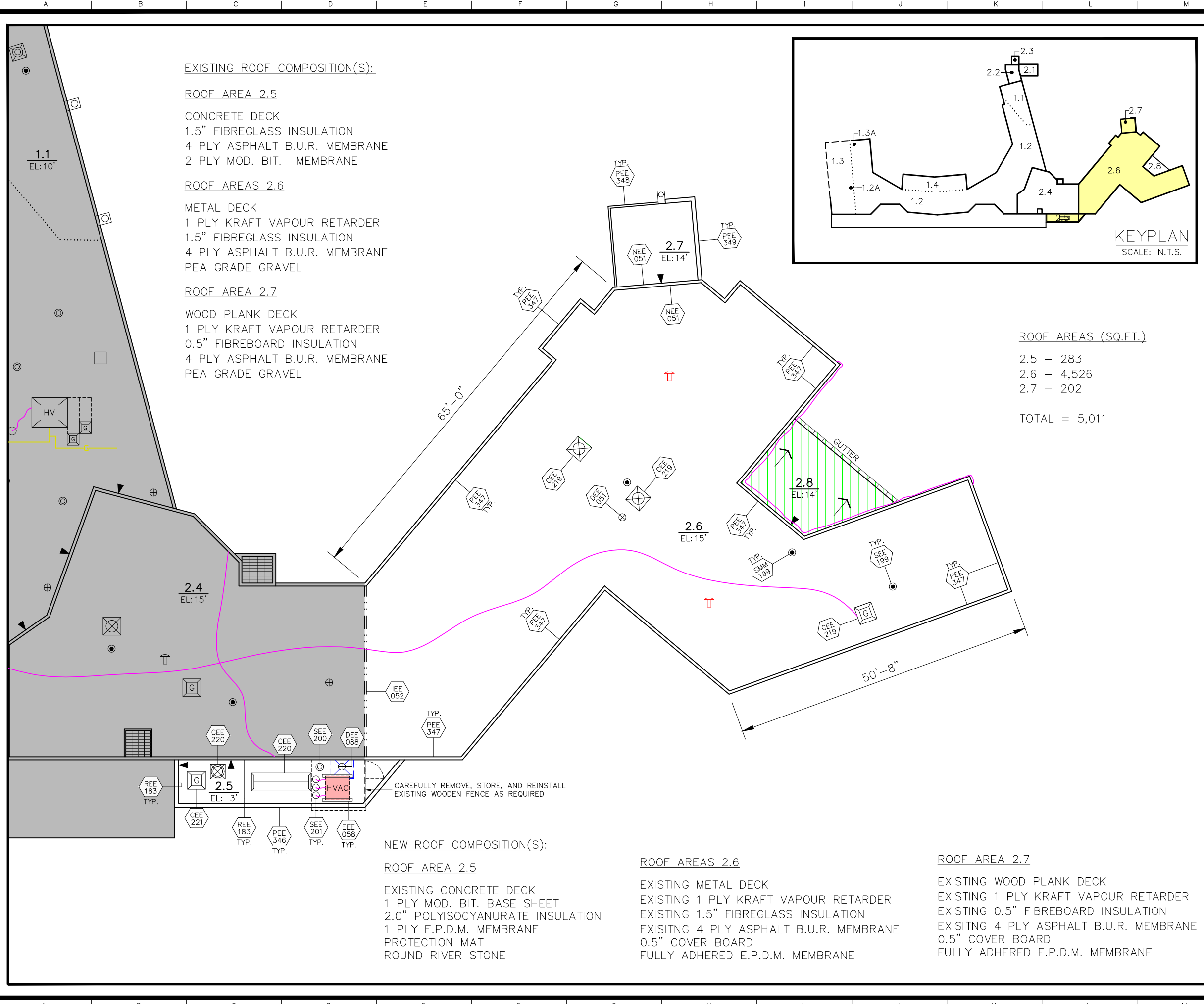
- .5 Ensure that new sealant is adhered to substrates a minimum of 6 to 10 mm at each side of joint.
  - .6 Use sufficient pressure to fill voids and joints solid.
  - .7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .8 Tool exposed surfaces before skinning begins to give slightly concave shape. Tooling to be performed by proper metal or wood tool. Finger tooling joints will not be accepted.
  - .9 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
- .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

### **3.8 CLEAN-UP**

- .1 Clean adjacent surfaces immediately and leave work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

**END OF SECTION - 07920**

M:\PROJECTS\20251-20500\20322-MEMBER & GUEST SERVICES, TORONTO ZOO\HR18-020SP\04\_CAD\02\_WORKING\IRC-20322-HR18-0205SP\_ROOT\_PLAN.DWG



EXISTING ROOF COMPOSITION(S):

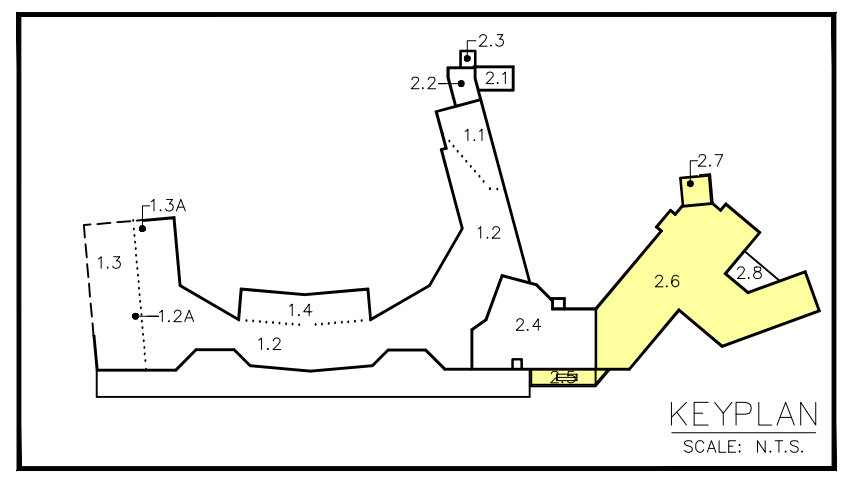
ROOF AREA 2.5  
 CONCRETE DECK  
 1.5" FIBREGLASS INSULATION  
 4 PLY ASPHALT B.U.R. MEMBRANE  
 2 PLY MOD. BIT. MEMBRANE

ROOF AREAS 2.6  
 METAL DECK  
 1 PLY KRAFT VAPOUR RETARDER  
 1.5" FIBREGLASS INSULATION  
 4 PLY ASPHALT B.U.R. MEMBRANE  
 PEA GRADE GRAVEL

ROOF AREA 2.7  
 WOOD PLANK DECK  
 1 PLY KRAFT VAPOUR RETARDER  
 0.5" FIBREBOARD INSULATION  
 4 PLY ASPHALT B.U.R. MEMBRANE  
 PEA GRADE GRAVEL

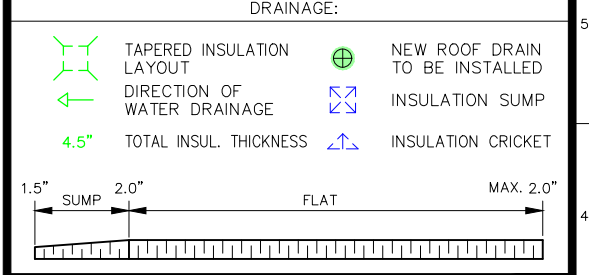
ROOF AREAS (SQ.FT.)

2.5	-	283
2.6	-	4,526
2.7	-	202
TOTAL		= 5,011



**LEGEND**

- |  |   |
|--|---|
|  | ROOF AREAS NOT INCLUDED IN CONTRACT       |
|  | CLEAN DEBRIS AND SEAL OPEN SEAMS AS REQ'D |
|  | REMOVE EXISTING BREATHER                  |
- ROOF PROJECTIONS:**
- |  |                                  |  |                               |
|--|----------------------------------|--|-------------------------------|
|  | ANTENNA                          |  | HVAC UNIT ON SLEEPERS         |
|  | BREATHER                         |  | LADDER                        |
|  | CAPPED OFF/ABANDONED STACK       |  | LIGHT POST                    |
|  | CHANGE IN ELEV.                  |  | PIPE SUPPORT                  |
|  | CHIMNEY                          |  | PITCH POCKET                  |
|  | CONDUIT LINE                     |  | PLUMBING OR SOIL STACK        |
|  | CONTROL JOINT                    |  | RA ROOF ANCHOR                |
|  | DRAIN                            |  | SATELLITE DISH                |
|  | EXHAUST FAN ON CURB              |  | SCUPPER                       |
|  | EXPANSION JOINT                  |  | SECURITY CAMERA               |
|  | EXPLOSION HATCH                  |  | SKYLIGHT                      |
|  | FLAGPOLE                         |  | SLOPE                         |
|  | GAS PIPELINE                     |  | SQUARE VENT                   |
|  | GOOSENECK VENT                   |  | SQUARE VENT ON OVERSIZED CURB |
|  | GOOSENECK VENT ON OVERSIZED CURB |  | TALL CONE OR "B" VENT         |
|  | HATCH                            |  | TALL CONE OR "B" VENT ON CURB |
|  | HVAC UNIT                        |  | UNUSED OPENING                |
|  | HVAC UNIT ON CURB                |  | WALKWAY PADS                  |



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 WWW.IRCGROUP.COM FAX: 905-607-7288

TITLE: PARTIAL ROOF PLAN  
 CLIENT: TORONTO ZOO  
 PROJECT: MEMBER & GUEST SERVICES  
 361A OLD FINCH AVE  
 TORONTO, ON, M1B 5K7

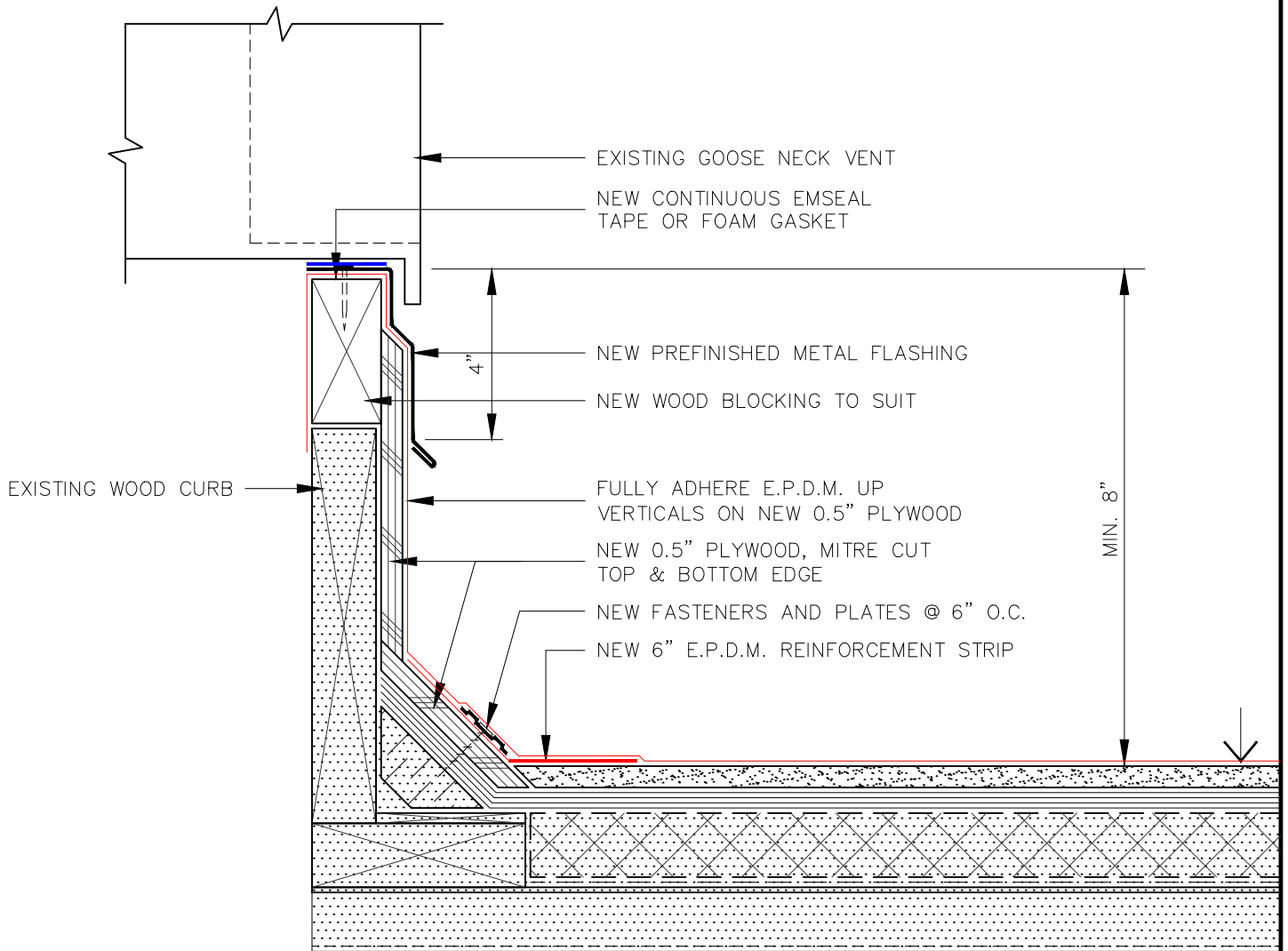
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W.O.#:	HR18-020SP		
SCALE:	1/16" = 1'-0"	DATE:	27 APRIL 18
DRN. BY:	L.B.C.	DWG.#:	R1
CHK. BY:	A.J.D./T.K.C.		

NEW ROOF COMPOSITION(S):

ROOF AREA 2.5  
 EXISTING CONCRETE DECK  
 1 PLY MOD. BIT. BASE SHEET  
 2.0" POLYISOCYANURATE INSULATION  
 1 PLY E.P.D.M. MEMBRANE  
 PROTECTION MAT  
 ROUND RIVER STONE

ROOF AREAS 2.6  
 EXISTING METAL DECK  
 EXISTING 1 PLY KRAFT VAPOUR RETARDER  
 EXISTING 1.5" FIBREGLASS INSULATION  
 EXISTING 4 PLY ASPHALT B.U.R. MEMBRANE  
 0.5" COVER BOARD  
 FULLY ADHERED E.P.D.M. MEMBRANE

ROOF AREA 2.7  
 EXISTING WOOD PLANK DECK  
 EXISTING 1 PLY KRAFT VAPOUR RETARDER  
 EXISTING 0.5" FIBREBOARD INSULATION  
 EXISTING 4 PLY ASPHALT B.U.R. MEMBRANE  
 0.5" COVER BOARD  
 FULLY ADHERED E.P.D.M. MEMBRANE



EXISTING METAL DECK  
 EXISTING VAPOUR RETARDER  
 EXISTING INSULATION SYSTEM  
 EXISTING B.U.R. MEMBRANE  
 NEW COVER BOARD  
 NEW E.P.D.M. MEMBRANE



TITLE: BUILT-UP CURB DETAIL

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REV'N.#:

DRN. BY: S.M.M./L.B.C.

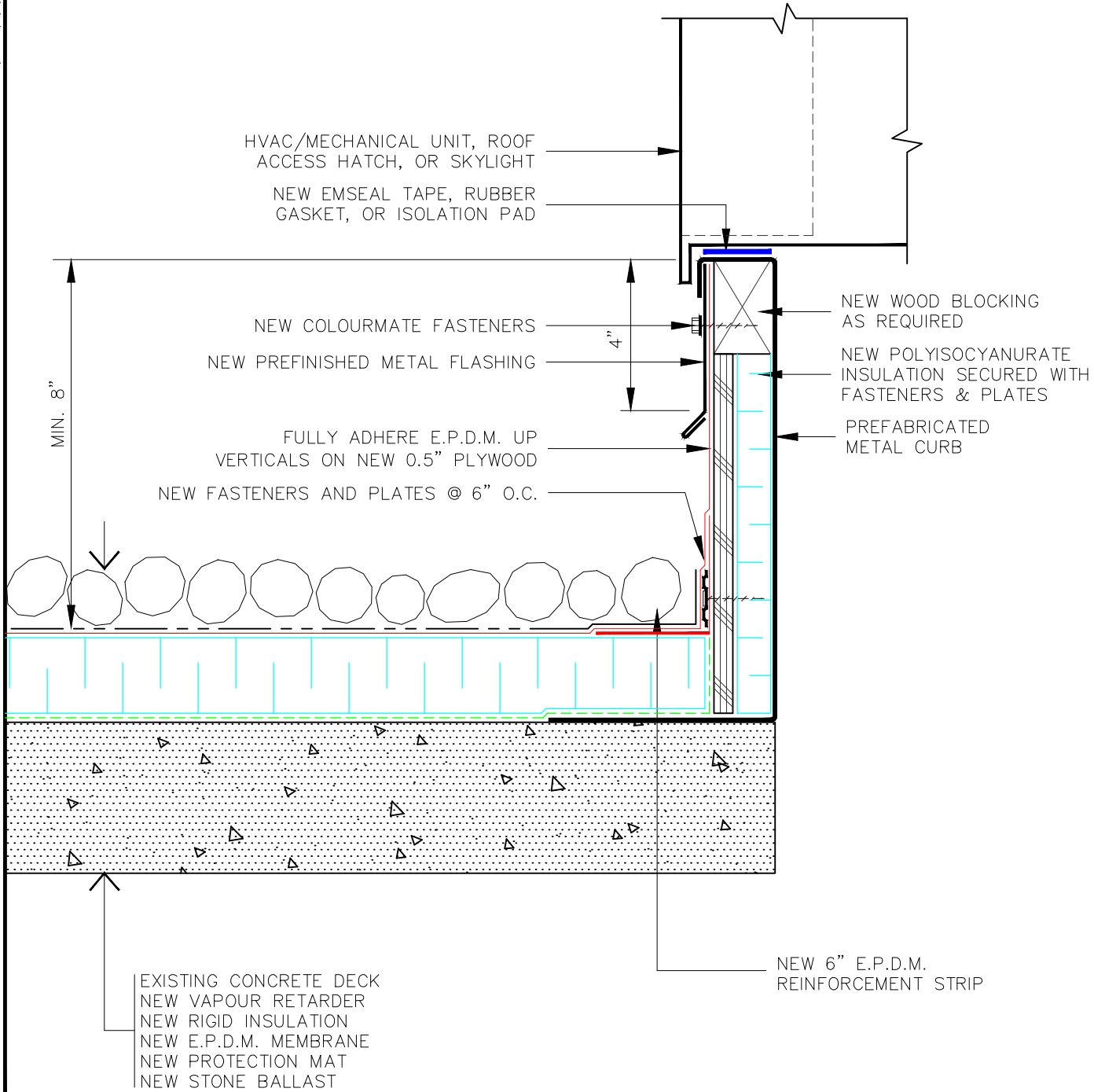
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DATE: 27 APR. 2018

DWG.#:

CEE219

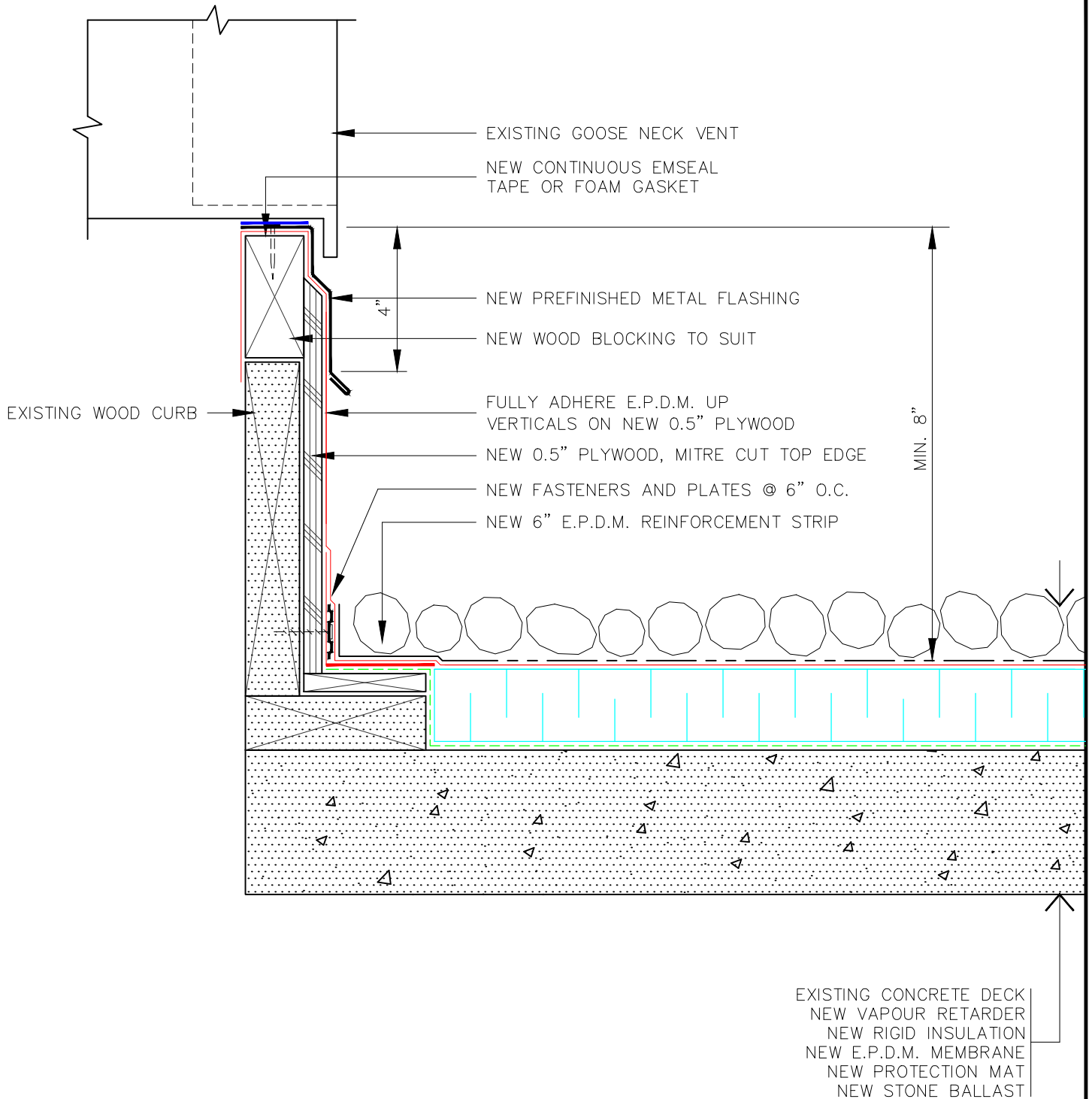


TITLE: EXISTING PREFAB. CURB

REVISED:  
 REV'N.#:  
 DRN. BY: S.M.M./L.B.C.  
 CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"  
 DATE: 27 APR. 2018  
 DWG.#: CEE220

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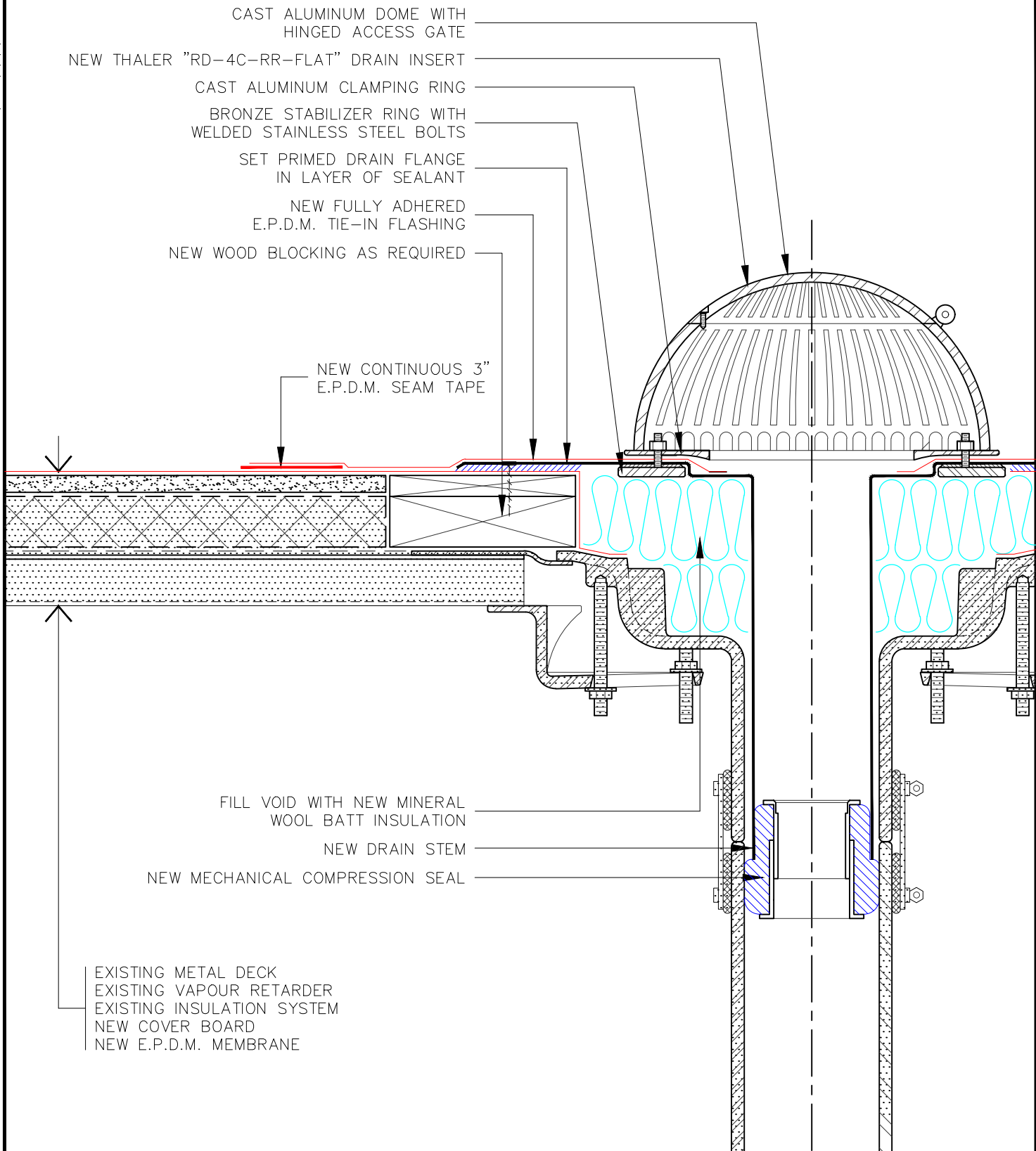
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SCALE: 3" = 1'-0"

DATE: 10 MAY 2018

DWG.#:

CEE221



TITLE: **RETRO DRAIN FLASHING DETAIL**

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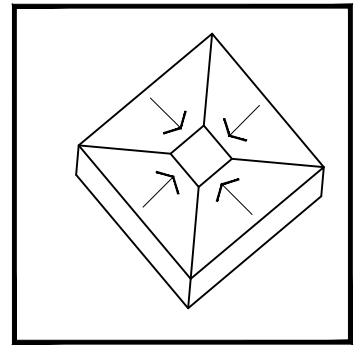
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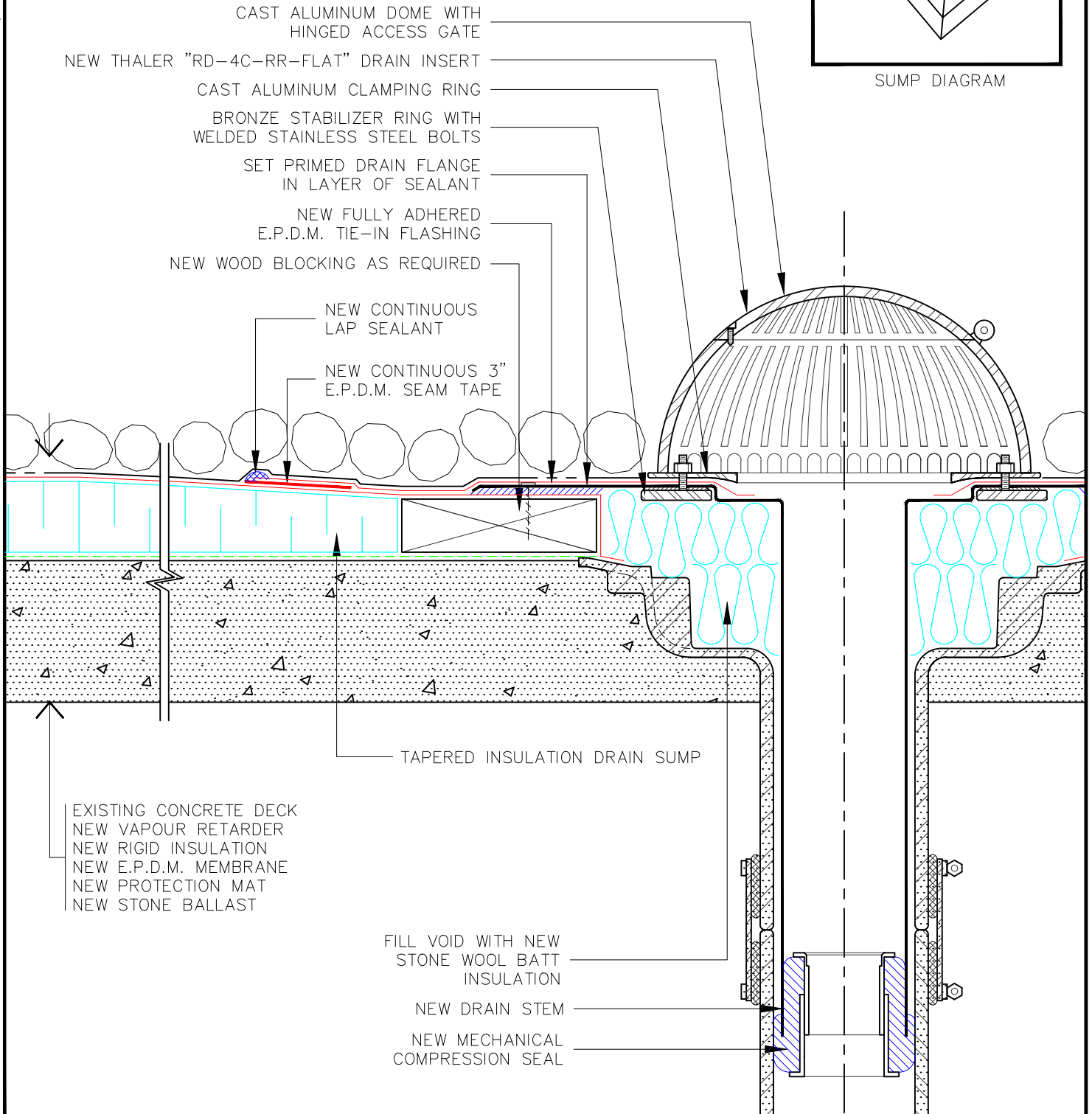
DWG.#:

DEE051





SUMP DIAGRAM



CAST ALUMINUM DOME WITH HINGED ACCESS GATE  
 NEW THALER "RD-4C-RR-FLAT" DRAIN INSERT  
 CAST ALUMINUM CLAMPING RING  
 BRONZE STABILIZER RING WITH WELDED STAINLESS STEEL BOLTS  
 SET PRIMED DRAIN FLANGE IN LAYER OF SEALANT  
 NEW FULLY ADHERED E.P.D.M. TIE-IN FLASHING  
 NEW WOOD BLOCKING AS REQUIRED

NEW CONTINUOUS LAP SEALANT  
 NEW CONTINUOUS 3" E.P.D.M. SEAM TAPE

EXISTING CONCRETE DECK  
 NEW VAPOUR RETARDER  
 NEW RIGID INSULATION  
 NEW E.P.D.M. MEMBRANE  
 NEW PROTECTION MAT  
 NEW STONE BALLAST

TAPERED INSULATION DRAIN SUMP  
 FILL VOID WITH NEW STONE WOOL BATT INSULATION  
 NEW DRAIN STEM  
 NEW MECHANICAL COMPRESSION SEAL



TITLE: RETRO DRAIN DETAIL

REVISED:

SCALE: 3" = 1'-0"

REV'N.#:

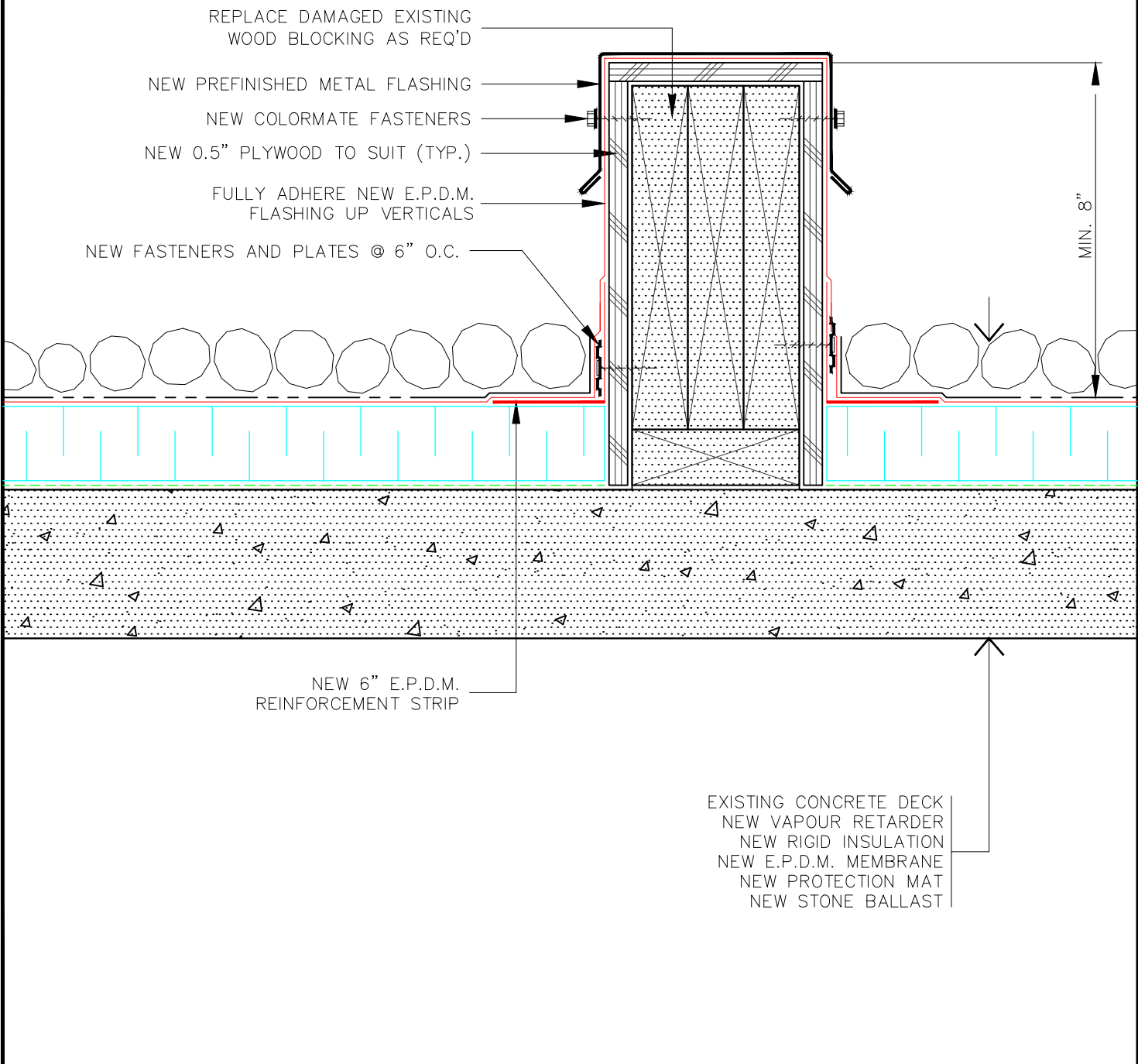
DATE: 27 APR. 2018

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DWG.#: DEE088

CHK. BY: A.J.D./T.K.C.



REPLACE DAMAGED EXISTING  
WOOD BLOCKING AS REQ'D

NEW PREFINISHED METAL FLASHING

NEW COLORMATE FASTENERS

NEW 0.5" PLYWOOD TO SUIT (TYP.)


FULLY ADHERE NEW E.P.D.M.  
FLASHING UP VERTICALS

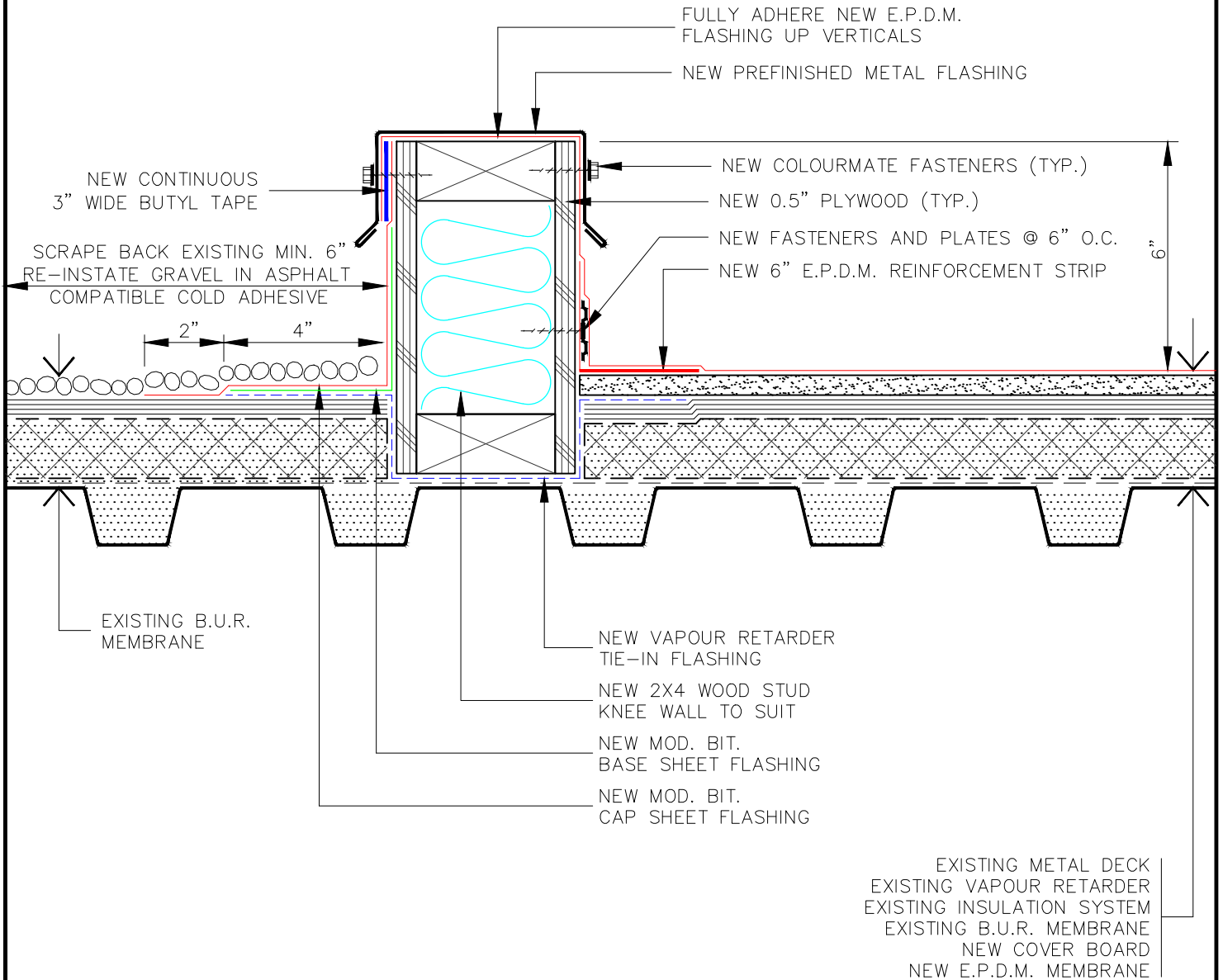
NEW FASTENERS AND PLATES @ 6" O.C.

MIN. 8"

NEW 6" E.P.D.M.  
REINFORCEMENT STRIP

EXISTING CONCRETE DECK  
NEW VAPOUR RETARDER  
NEW RIGID INSULATION  
NEW E.P.D.M. MEMBRANE  
NEW PROTECTION MAT  
NEW STONE BALLAST

	TITLE: SLEEPER FLASHING DETAIL	REVISED:	SCALE: 3" = 1'-0"
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		DRN. BY: F.R.A./L.B.C.	DWG.#: EEE058
		CHK. BY: A.J.D./T.K.C.	



TITLE: CONTROL JOINT DETAIL:  
NEW TO EXISTING

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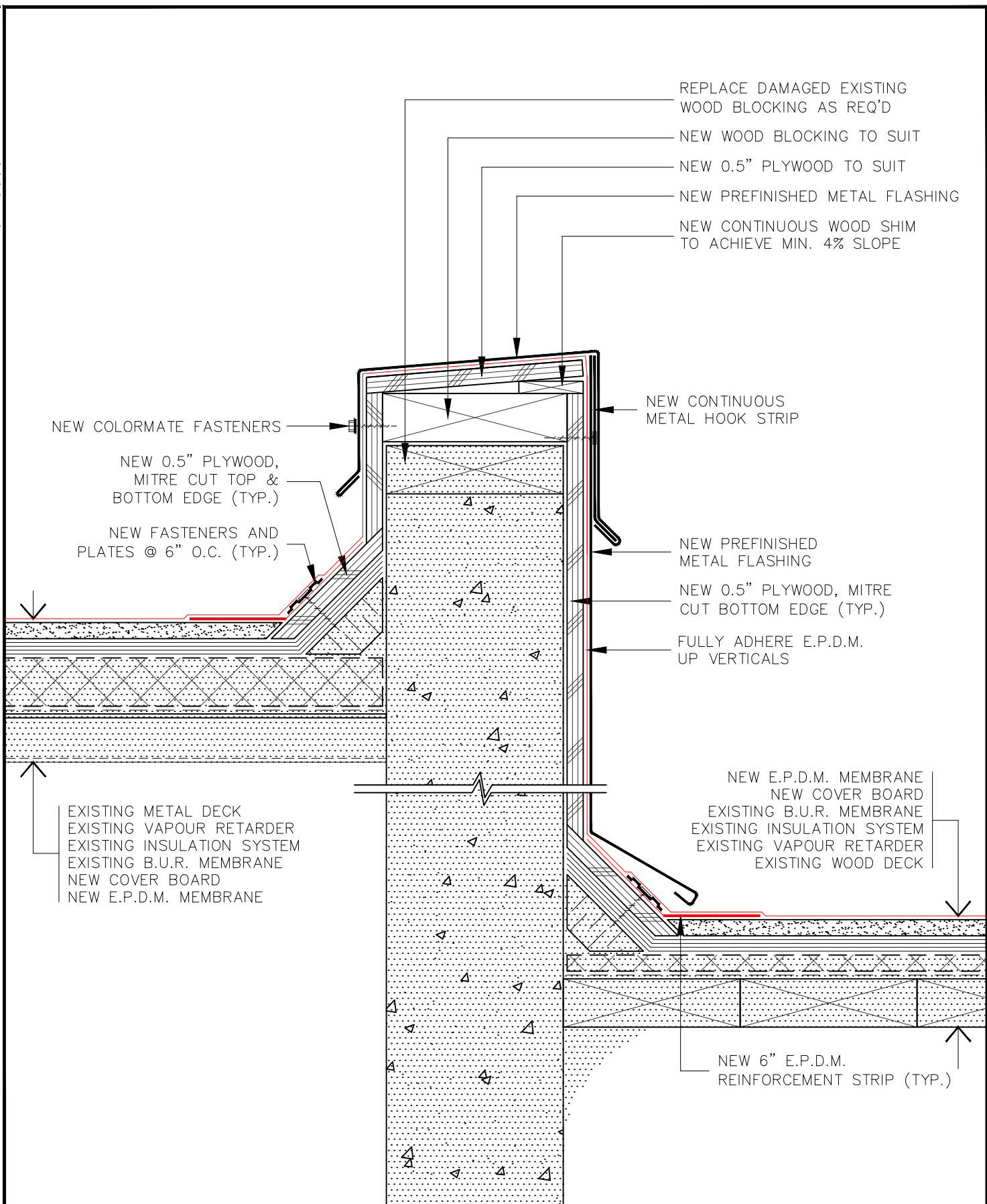
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SCALE: 3" = 1'-0"

DATE: 25 APR. 2018

DWG.#:

IEE052



TITLE: TRANSITION TIE-IN DETAIL

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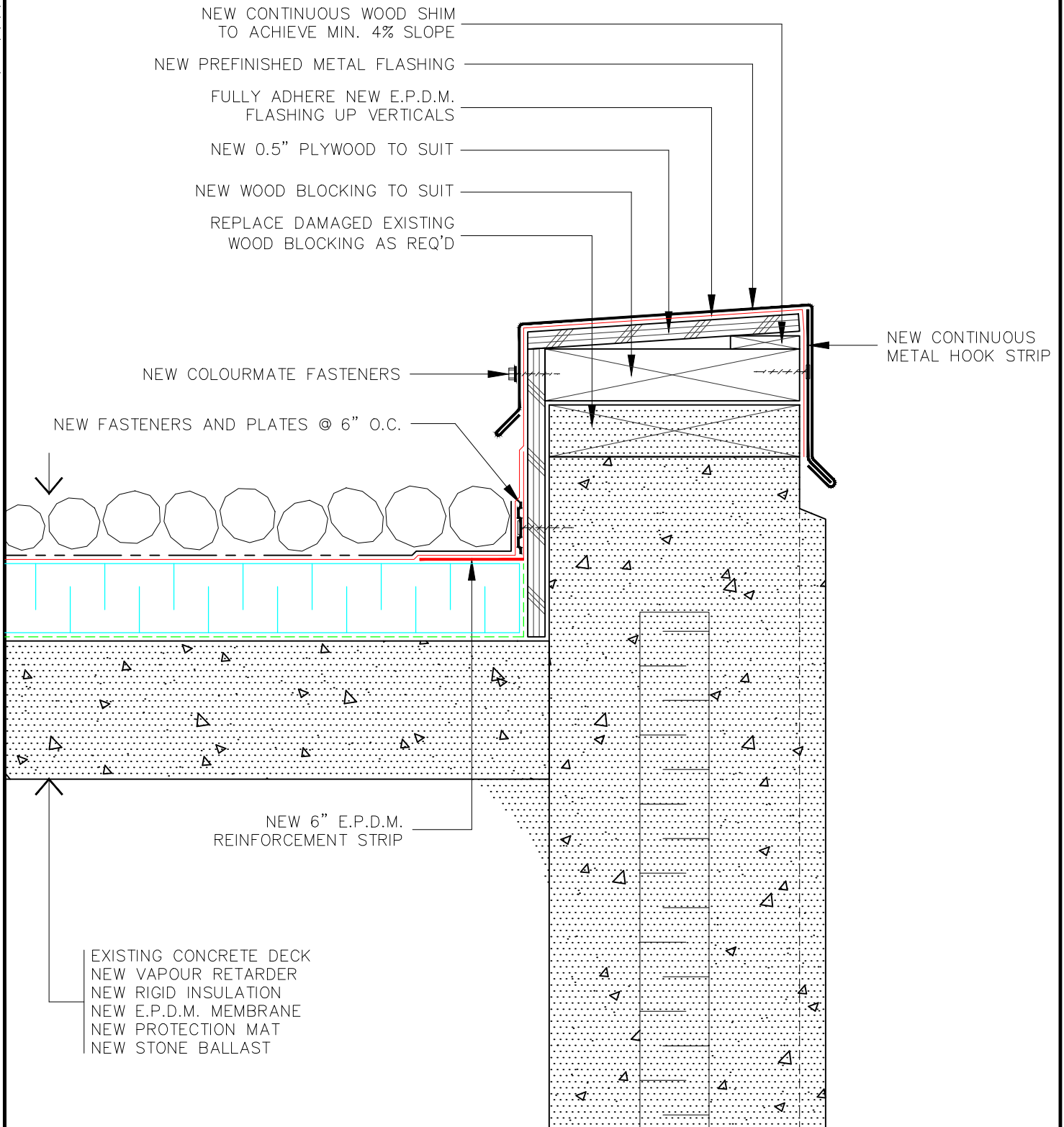
CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"

DATE: 27 APR. 2018

DWG.#:

NEE051



TITLE: PERIMETER FLASHING DETAIL

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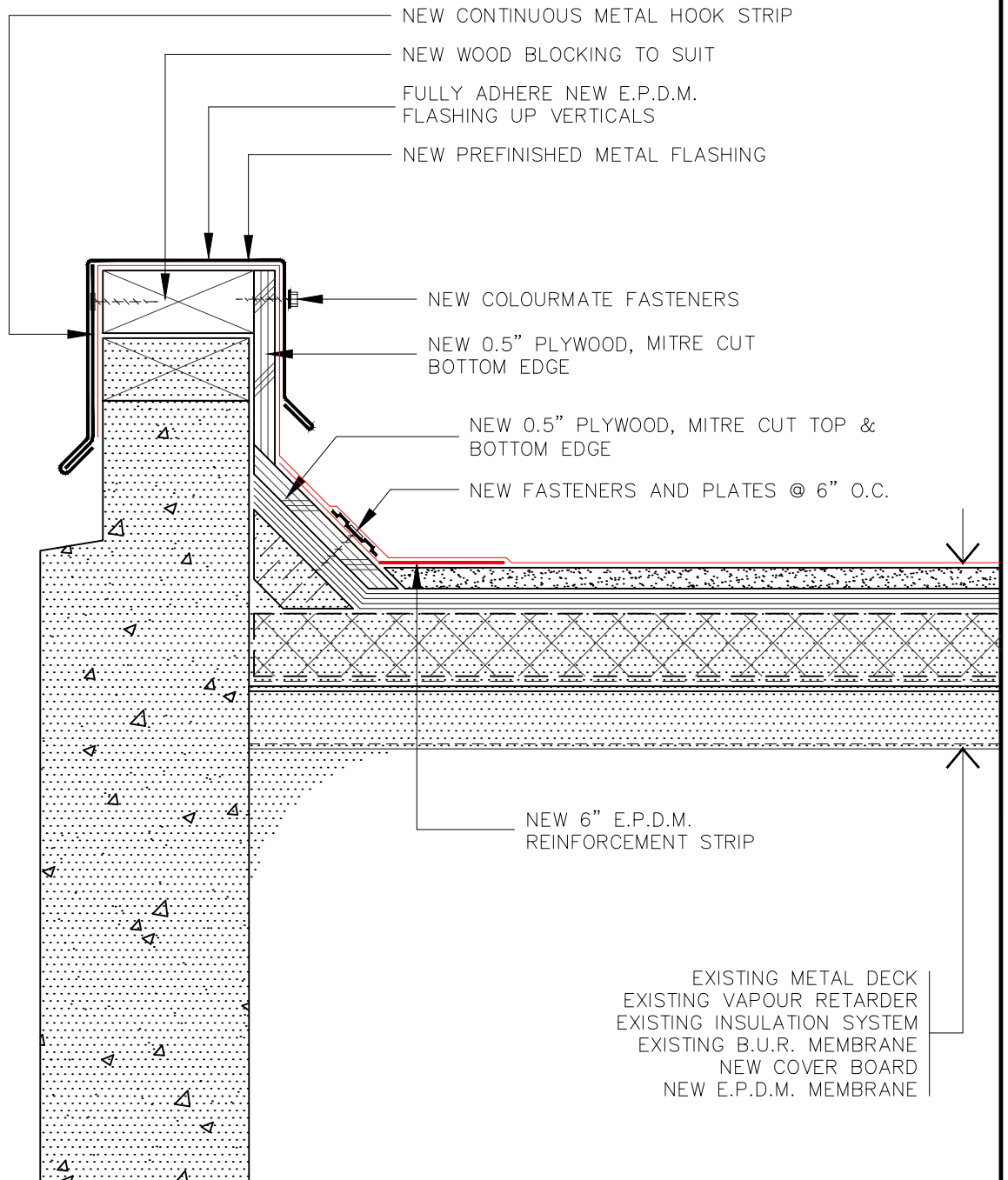
CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"

DATE: 11 MAY 2018

DWG.#:

PEE346



TITLE: PERIMETER FLASHING DETAIL

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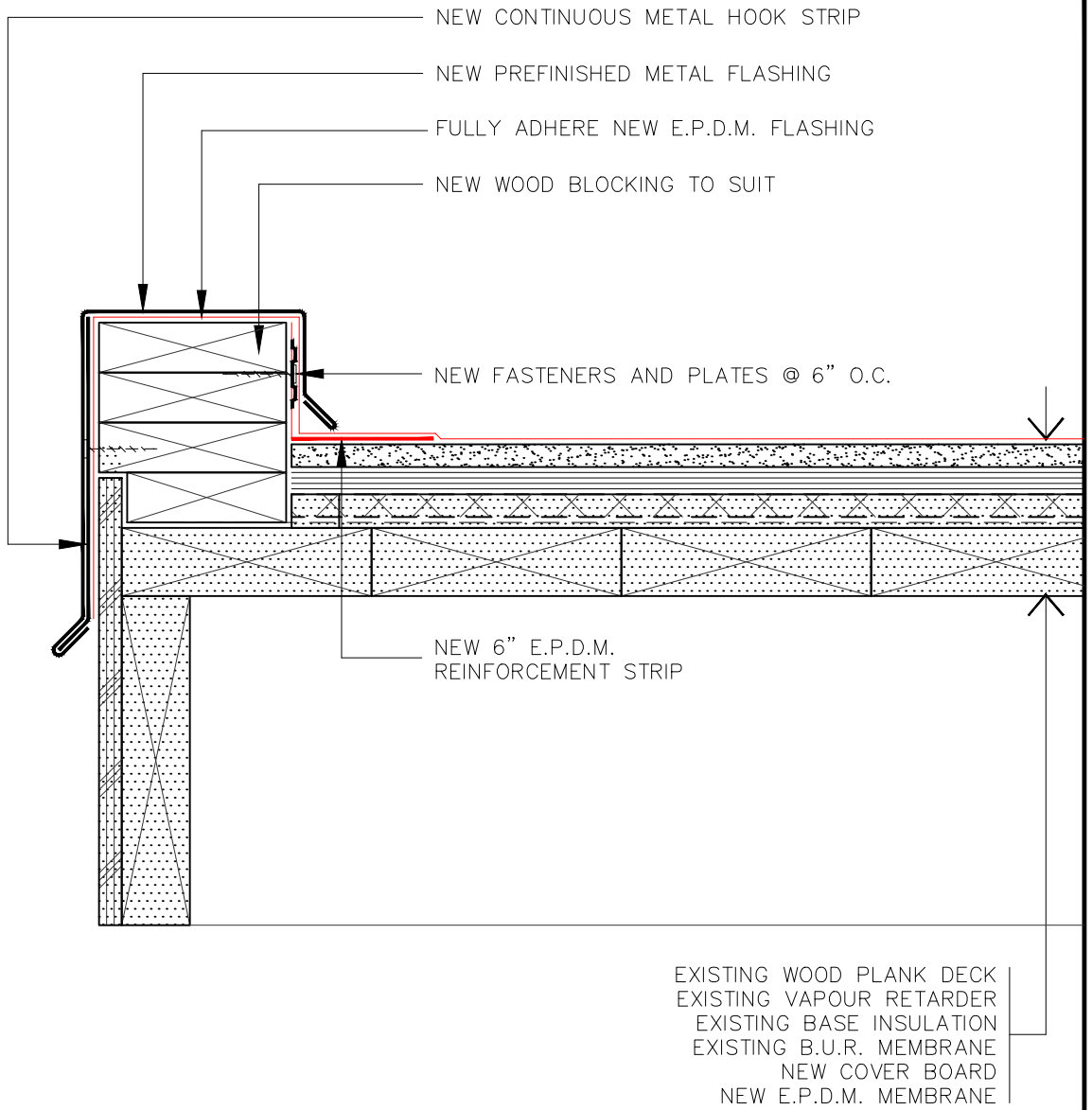
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SCALE: 3" = 1'-0"

DATE: 27 APR. 2018

DWG.#:

PEE347



TITLE: PERIMETER FLASHING DETAIL

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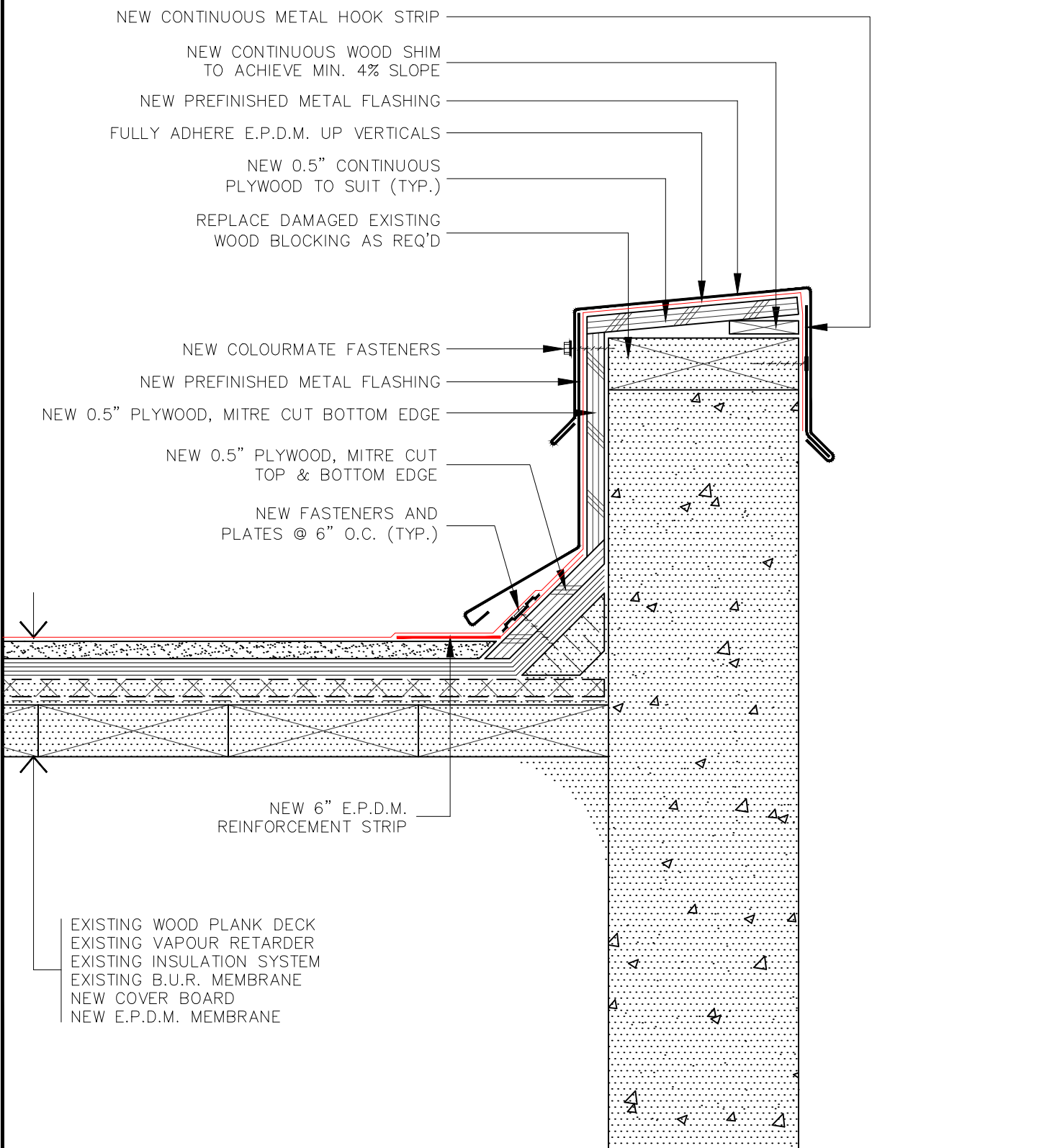
DRN. BY: Q.P.

CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"

DATE: 27 APR. 2018

DWG.#: PEE348



NEW CONTINUOUS METAL HOOK STRIP  
 NEW CONTINUOUS WOOD SHIM  
 TO ACHIEVE MIN. 4% SLOPE  
 NEW PREFINISHED METAL FLASHING  
 FULLY ADHERE E.P.D.M. UP VERTICALS  
 NEW 0.5" CONTINUOUS  
 PLYWOOD TO SUIT (TYP.)  
 REPLACE DAMAGED EXISTING  
 WOOD BLOCKING AS REQ'D

NEW COLOURMATE FASTENERS  
 NEW PREFINISHED METAL FLASHING  
 NEW 0.5" PLYWOOD, MITRE CUT BOTTOM EDGE  
 NEW 0.5" PLYWOOD, MITRE CUT  
 TOP & BOTTOM EDGE  
 NEW FASTENERS AND  
 PLATES @ 6" O.C. (TYP.)

NEW 6" E.P.D.M.  
 REINFORCEMENT STRIP

EXISTING WOOD PLANK DECK  
 EXISTING VAPOUR RETARDER  
 EXISTING INSULATION SYSTEM  
 EXISTING B.U.R. MEMBRANE  
 NEW COVER BOARD  
 NEW E.P.D.M. MEMBRANE



TITLE: TRANSITION TIE-IN DETAIL

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REVISED:

REV'N.#:

DRN. BY: L.B.C.

CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"

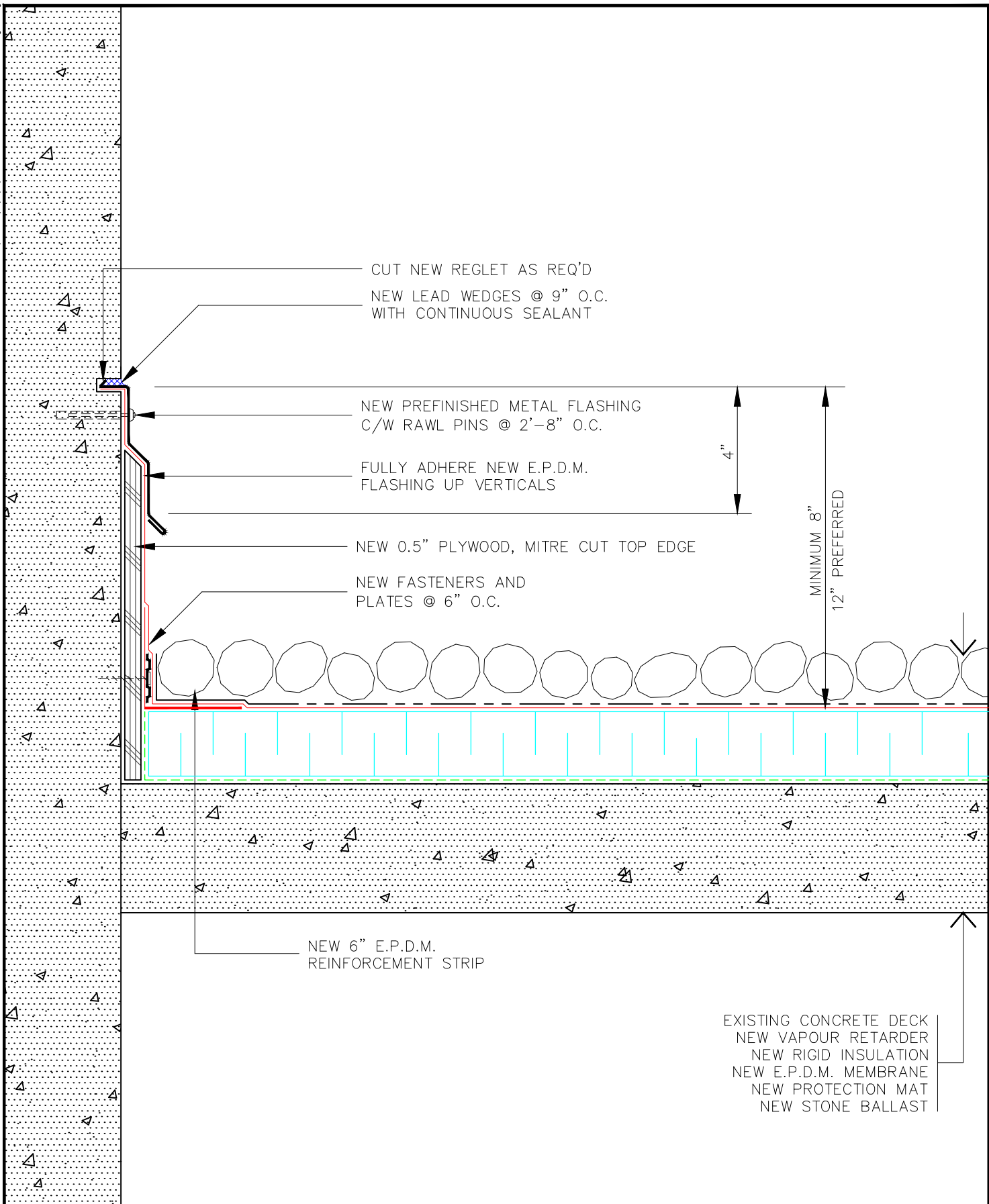
DATE: 27 APR. 2018

DWG.#:

PEE349



M:\Details\A\A\REE183-RR-CD-ISO-DD\_ConcreteReglet.dwg



TITLE: CONCRETE REGLET DETAIL

REVISED:

SCALE: 3" = 1'-0"

REV'N.#:

DATE: 11 MAY 2018

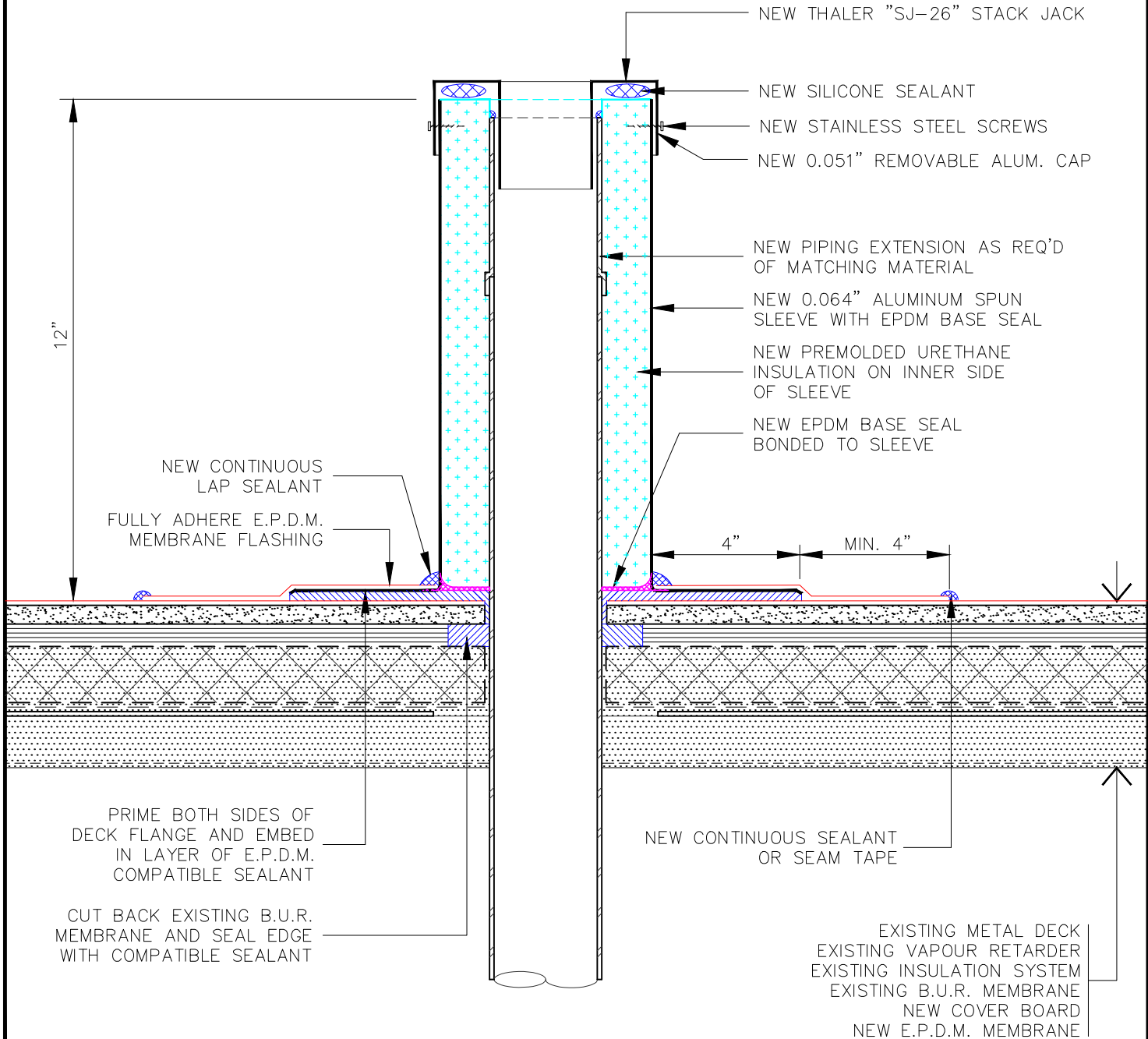
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DRN. BY: L.B.C.

DWG.#:

REE183

CHK. BY: T.K.C./A.J.D.

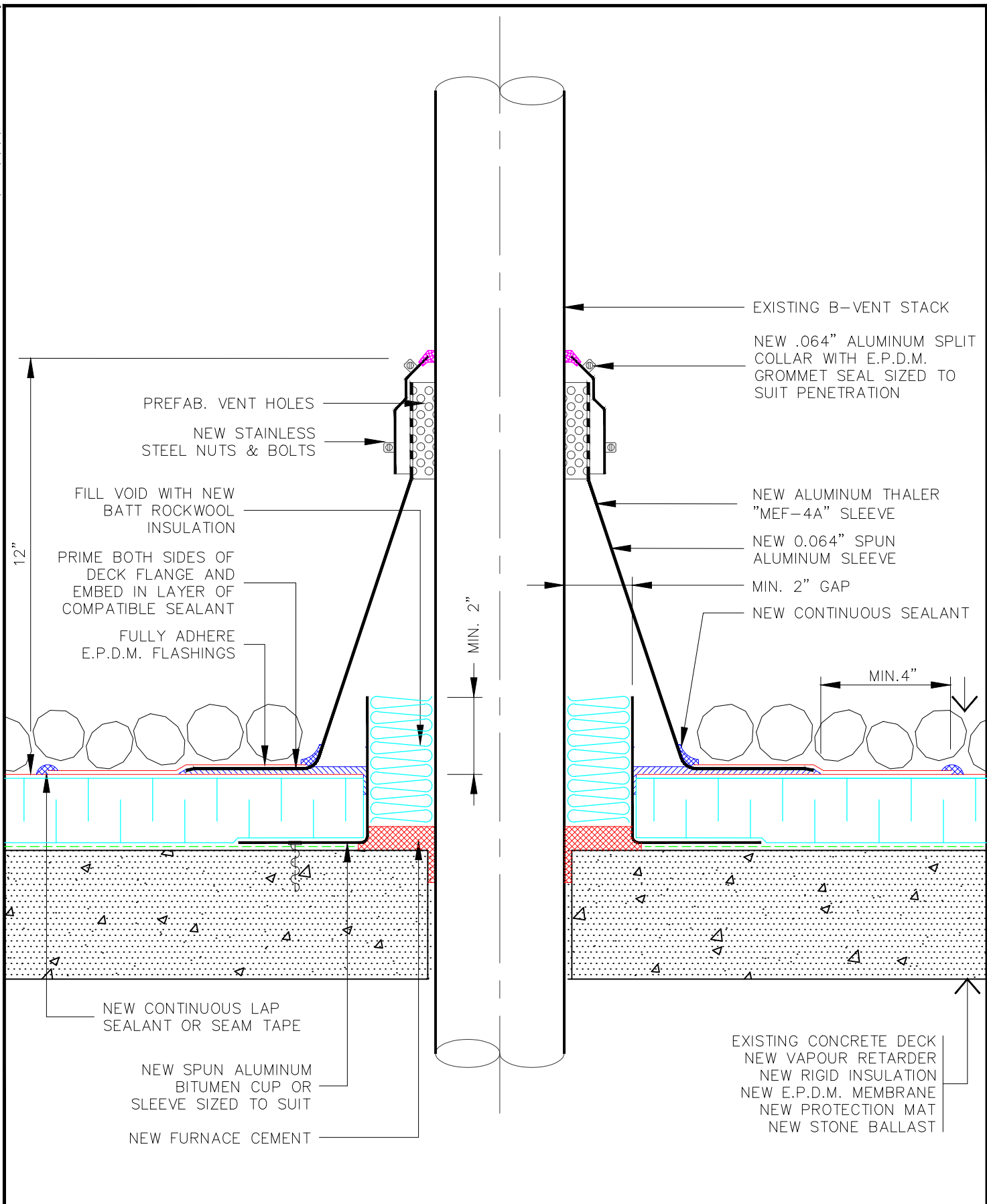


TITLE: PLUMBING STACK DETAIL

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 REV'N.#:  
 DRN. BY: J.L./L.B.C.  
 CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"  
 DATE: 27 APR. 2018  
 DWG.#: SEE199



TITLE: B-VENT FLASHING DETAIL

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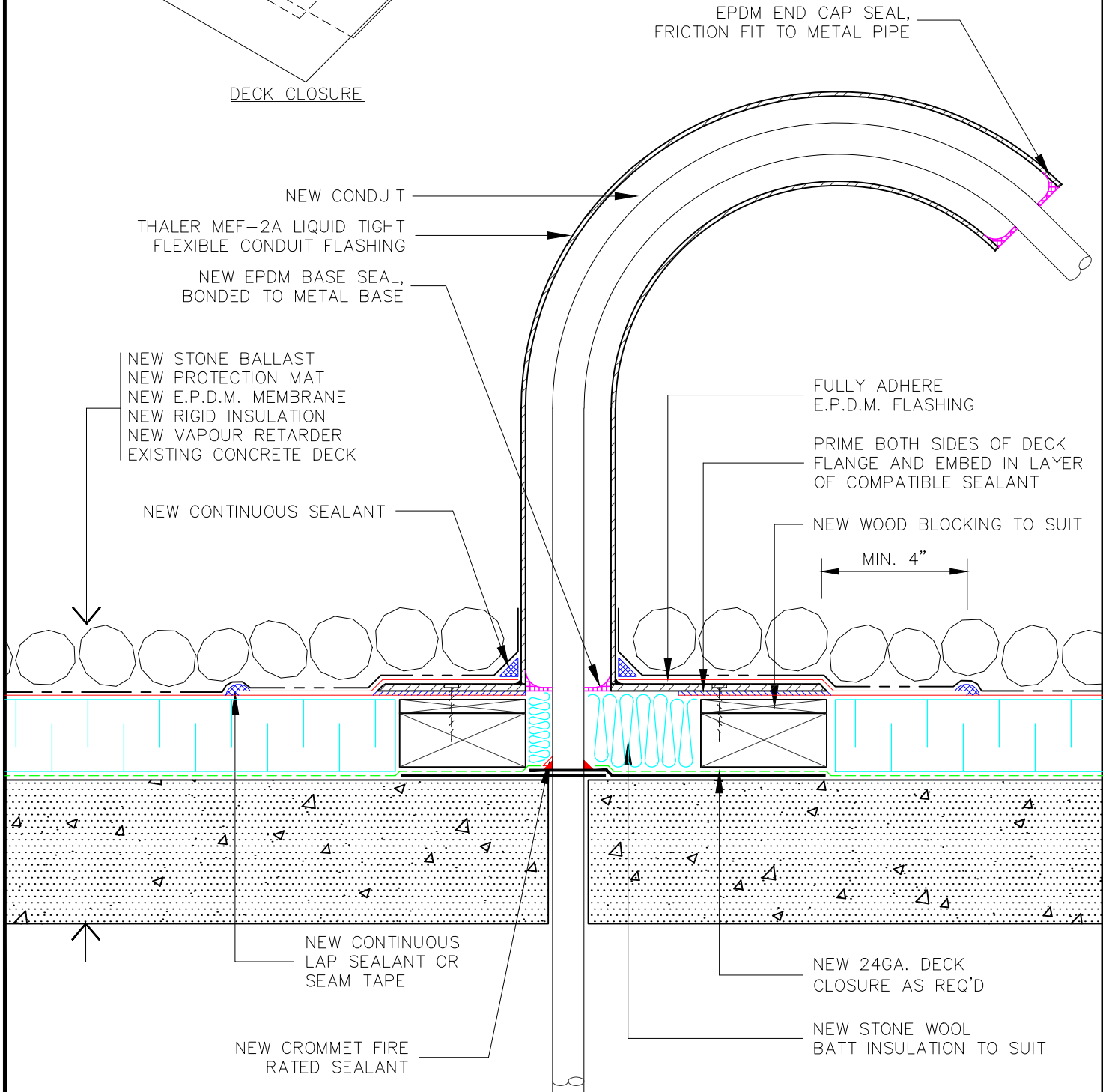
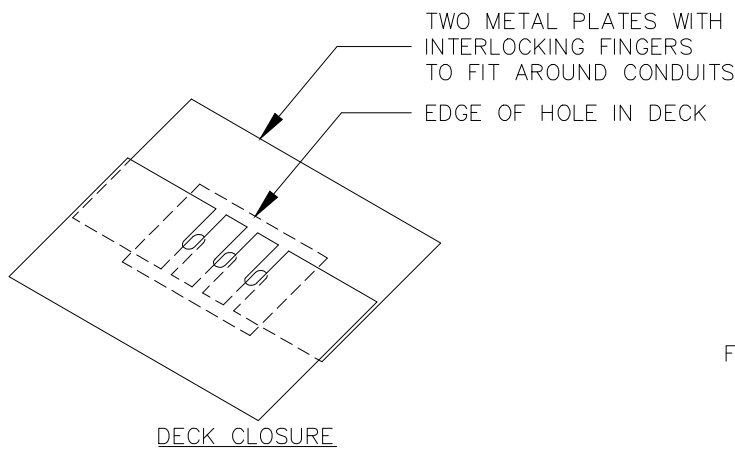
DRN. BY: F.R.A./L.B.C.

CHK. BY: T.K.C./A.J.D.

SCALE: 3" = 1'-0"

DATE: 27 APR. 2018

DWG.#: SEE200



TITLE: FLEXIBLE CONDUIT DETAIL:  
COPPER GOOSENECK

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DRN. BY: J.L./L.B.C.

CHK. BY: A.J.D./T.K.C.

SCALE: 3" = 1'-0"

DATE: 11 MAY 2018

DWG.#: SEE201