



REQUEST FOR TENDER

CARIBOU CAFÉ – WASHROOM UPGRADES

RFT # 45 (2019-08)

ISSUE DATE: 2019-09-04

NAME OF TENDERER: _____

AMOUNT OF TENDER: \$ _____

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:

Tuesday, 2019-09-24, at 1200 hours (noon, local time) delivered as indicated below clearly marked "TENDER #45 (2019-08)".

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 from qualified contractors to provide labour, material, equipment and all other services necessary to complete the Caribou Café – Washroom Upgrades (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 tender documents, drawings and specifications.
- (a) Drawings and specifications to include:
- (i) Toronto Zoo Caribou Washroom – Tendering Arch Specifications Package
 - (ii) Toronto Zoo Caribou Washroom – Tendering Drawing Package
 - (iii) Elec Spec + Panel Schedule + Distribution Quote 19064
 - (iv) 19064 Toronto Zoo Caribou Café Elec Re Tender Aug 12, 2019
- 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 The contractor shall supply the Zoo with copies of relevant certificates and licenses for all workers prior to commencement of work.
- 1.1.4 All measurements to be site verified.
- 1.1.5 Protect all areas not affected by the work. Any damage to these areas will be the responsibility of the contractor to rectify.
- 1.1.6 Any required barricades shall be supplied and installed by the successful bidder.
- 1.1.6.1 Erect temporary site enclosures using:
- 1.1.6.1.1 38 x 89 mm (2" x 4") construction grade lumber framing at 600 mm (24") centres and 1200 x 2400 x 13 mm (48" x 96" x ½") exterior grade fir plywood to CSA O121. Apply plywood panels vertically flush and butt jointed. To be painted TZ Green (TZ to provide paint), or Wrapped with TZ designed graphic (TZ Supplied) ,or:
 - 1.1.6.1.2 1800 mm (72") high interlocking steel fence, with openings no greater than 38 mm (1- ½"). To include privacy screen.
 - 1.1.6.1.3 Upon approval by the Toronto Zoo, and whereby the work site is enclosed with a permanent fence and not shared with another site, the contractor may utilize this as the site enclosure. The contractor shall temporarily install a privacy screen to separate the work area from the non-work area, for the duration of the project. The privacy screen is to be installed such that it does not cause any damage(s). The contractor shall still control access, whereby unauthorized personnel must still be prevented from entering the area.
- 1.1.7 Materials/equipment that are not called for removal in the drawings and specifications, but must be removed as a result of new installation called for in the drawings and specifications - shall be reinstated. If the material/equipment cannot be, or is not recommended to be reinstated, the contractor shall seek approval from the owner to dispose of offsite – at no additional cost to the owner.

- 1.1.8 Any work must be carefully coordinated with the Zoo to ensure the safety of visitors, staff and the animals.
 - 1.1.8.1 Overhead work shall be performed using appropriate barricades to prevent people from inadvertently walking below the work.
 - 1.1.8.2 Any equipment parked on service roads or public pathways shall be completely surrounded by appropriate barricades to prevent unauthorized personnel from entering the area.
 - 1.1.8.3 Any required barricades shall be supplied and installed by the successful bidder.
- 1.1.9 Provide proper ventilation for the duration of this work to ensure fumes are not transmitted into other areas of the building.
- 1.1.10 Clean the work area and remove all debris from site on a daily basis.
- 1.1.11 Excess material will be stored on the Toronto Zoo site for future use. Toronto Zoo staff will designate a suitable area for stockpiling of additional material.
- 1.1.12 The contractor is required to provide closeout documents including but not limited to as built drawings, warranty, and inspection certificates.
- 1.1.13 The contractor is to notify the Toronto Zoo upon completion of the work. The work is to be reviewed and approved by the Toronto Zoo prior to acceptance of the work.
- 1.1.14 The Contractor is responsible for all pricing and all other arrangements with their subcontractors as required.

THE WORK AND EVERY PART THEREOF SHALL BE COMPLETED BY THE CONTRACTOR WITHIN/BY FRIDAY, 2019-11-29 FOR ALL WORK- FOLLOWING RECEIPT OF NOTICE TO COMMENCE WORK FROM THE CHIEF EXECUTIVE OFFICER OR DESIGNATED REPRESENTATIVE

1.2 In these Instructions

- 1.2.1 **“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;
- 1.2.2 **"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 Executive Officer or designated representative;
- 1.2.3 **“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
- 1.2.4 **"Board Solicitor"** means the person for the time being filling the office of Solicitor for the Board, or the person then acting as such;
- 1.2.5 **"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;

- 1.2.6 **"CEO"** means the Chief Executive Officer or designate representative of the Toronto Zoo;
- 1.2.7 **"City" or words "the City"** means the City of Toronto;
- 1.2.8 **"Consultant"** means the consultant for the Work;
- 1.2.9 **"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;
- 1.2.10 **"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;
- 1.2.11 **"Contractor", or a pronoun in place thereof,** means the person or persons or corporation who have undertaken to carry out the Contract;
- 1.2.12 **"Council"** means the Council of the City of Toronto;
- 1.2.13 **"Drawings"** means the Drawings included as Section V of the Tender Package;
- 1.2.14 **"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;
- 1.2.15 **"General Conditions"** means the General Conditions included as Section III of the Tender package;
- 1.2.16 **"Inspector"** means an inspector for the Board acting under the direction of the Chief Executive Officer or designated representative;
- 1.2.17 **"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.
- 1.2.18 **"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
- 1.2.19 **"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;
- 1.2.20 **"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;
- 1.2.21 **"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;

- 1.2.22 "**Specifications**" means the Specifications included as Section IV of the Tender Package;
- 1.2.23 "**Specifications**", "**General Conditions**", and "**Agreement**" mean respectively the Specifications, these General Conditions and the Agreement forming part of the Contract;
- 1.2.24 "**Tender Package**" means the contents of the Tender Package dated 2019-08-28 for the Work, as listed on the "Contents" page immediately proceeding these Instructions;
- 1.2.25 "**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 Executive Officer or designated representative, as herein provided;
- 1.2.26 "**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 EXISTING CONDITIONS AND SITE INSPECTION:

- 2.0 A site meeting has been scheduled for **Monday, 2019-09-09 at 10:00 a.m.** Tender documents are available to download at no charge from the Toronto Zoo website, <http://www.torontozoo.com/business> 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 Monday, 2019-09-19.
- 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 Consultant 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:

DUE DATE:

Tuesday, 2019-09-24, at 1200 hours (noon, local time) delivered as indicated below clearly marked “TENDER #45 (2019-08)”. No Tender will be accepted after the stipulated due date and time.

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.

- 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, 2019-11-29 FOR ALL WORK-** FOLLOWING RECEIPT OF NOTICE TO COMMENCE WORK FROM THE CHIEF EXECUTIVE OFFICER OR DESIGNATED REPRESENTATIVE.

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:

FORM 1 Item*	Subject
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)	NOTE 1: 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 8 (i) of the Tender Form.
- 5.4 The effect of clause 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 8 (iv) of the Tender Form is to oblige the Contractor to ensure where possible, all materials necessary for the purposes of the Work shall be 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"> - Corporate Seal or signature of bidder missing. - Both corporate seal and signature of the bidder missing. Corporate seal or signature of authorized agents of bonding company missing. 	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"> - Corporate seal or signature missing. - Corporate seal and signature missing. 	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).	Two (2) business days to initial.

Unit prices have been changed but not initialed and the contract totals are consistent with the price as amended.	Two (2) business days to initial.
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** If it becomes necessary to revise any part of this RFT, the revisions will be by Addendum posted electronically in Adobe PDF format on the Toronto Zoo's website. <http://www.torontozoo.com/business>
Bidders and prospective bidders should check the site frequently for any updated information and addenda issued, before the closing date and 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

The Owner has a reserve contingency allowance in place to cover Faucets, Soap Dispensers and Hand Dryers as noted below.

All extra cost items to be approved by owner or owner representative and must be supported by invoices and / or approved change orders. The cash allowance is intended for, but not limited to the following items:

- (a) Supply & Install of Faucets
- (b) Supply & Install of Soap Dispensers
- (c) Supply & Install of Hand Dryers

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 11.2 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 8 (i) 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 Executive Officer or designated representative, 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

- 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.

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 Executive Officer or designated representative. 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 Executive Officer or designated representative.

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.

Vendor Name _____

**RFT #45 (2019-08)
CARIBOU CAFÉ – WASHROOM UPGRADES
Closing: Tuesday, 2019-09-24, 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**

QUESTIONS ON BID DOCUMENTS (QBD)**Deadline:** 4:00 p.m. on Monday, 2019-09-16.

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.



Notice of No Bid

RFT #45 (2019-08) – CARIBOU CAFÉ – WASHROOM UPGRADES

It is important to the Toronto Zoo to receive a reply from all invited bidders. If you are unable, or do not wish to submit a bid, please complete the following portions of this form. State your reason for not bidding by checking the applicable box(es) or by explaining briefly in the space provided. It is not necessary to return any other Request for Proposal/Quotation/Tender documents or forms. Please just return this completed form by email purchasing@torontozoo.ca or fax 416 392-6711 prior to the official closing date.

A Proposal/Quotation/Tender is not submitted for the following reason(s):		
<input type="checkbox"/>	Project/quantity too large.	<input type="checkbox"/> Project/quantity too small.
<input type="checkbox"/>	We do not offer services or commodities to these requirements	<input type="checkbox"/> Cannot meet delivery or completion requirement
<input type="checkbox"/>	We do not offer this service or commodity.	<input type="checkbox"/> Agreements with other company do not permit us to sell directly.
<input type="checkbox"/>	Cannot handle due to present commitments.	<input type="checkbox"/> Licensing restrictions
<input type="checkbox"/>	Unable to bid competitively.	<input type="checkbox"/> We do not wish to bid on this service or commodity in the future.
<input type="checkbox"/>	Insufficient information to prepare quote/proposal/tender	<input type="checkbox"/> Specifications are not sufficiently defined
<input type="checkbox"/>	We are unable to meet bonding or insurance requirements.	

<u>Other reasons or additional comments (please explain):</u>

Company Name:	
Address	
Contact Person:	
Signature of Company Representative:	
Date:	
Phone Number:	
Email address	
Fax Number:	

**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

Requirements of the Accessibility Standards for Customer Service (Ontario Regulation 429/07):

www.e-laws.gov.on.ca/html/source/regqs/english/2007/elaws_src_regqs_r07429_e.htm

**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 & 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. ANIMALS AND PEDESTRIANS ALWAYS HAVE THE RIGHT OF WAY. 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>



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.

Subject: **HOT WORK**

<i>Safety precautions</i>	<p>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.</p> <p>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.</p>
<i>Equipment</i>	<p>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.</p> <p>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.</p>
<i>Contractors</i>	<p>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.</p>
REFERENCE	Appendix 1 - Hot Work Permit System

Subject: **HOT WORK**

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

- 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) _____

TIME STARTED _____ TIME FINISHED _____
 AM PM AM PM

PERMIT EXPIRES DATE _____ TIME _____ AM PM

FIRE WATCH SIGNOFF:
 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: _____

FINAL CHECKUP:
 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

PURPOSE	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.
POLICY	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.
PROCEDURE	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**

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

OFFICIAL POLICY

Section: Safety

Subject: **HEALTH & SAFETY**

PURPOSE	This policy is intended to provide information and direction to Zoo employees on their ongoing responsibility for health and safety in the workplace.
POLICY	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.
PROCEDURE	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 & 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"> 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 and review annually and communicate changes to ensure that they are understood by supervisors. 3. Exercise hazard recognition and control through workplace inspection, conducting information sessions (e.g. staff meetings), incident investigation, employee training and observation. 4. Ensure that Health & Safety obligations are communicated within the first week of hire.

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 & 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"> 1. The Occupational Health & Safety Act and Regulations, and Workplace Safety & Insurance Act. 2. Health & safety policies and workplace safety procedures of the Zoo. 3. Hazard recognition, investigation and accident prevention. 4. Workplace inspections, Workplace Hazardous Materials Information System (WHMIS), and preventive health education and recognition programs. 5. Emergency Response procedures, First Aid and CPR. 6. Other programs as required. <p>The Human Resources Branch will arrange training session in other areas of Occupational Health & Safety, as recommended by the Safety & Security Manager and approved by the Chief Operating Officer.</p>
<i>Branch-specific safety training programs</i>	<p>Each Director, Manager & 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 & 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"> 1. New employees, employees re-assigned to their units, and employees returning from extended absence. 2. Current employees, as part of a regular review of Health & Safety Policies and Procedures, and Branch Instructions.
<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>

Subject: **HEALTH & SAFETY**

*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).
REFERENCE	Work Refusal & Work Stoppage Policy, SAFE-015



OFFICIAL POLICY

Section: Safety

Subject: HAZARDOUS MATERIALS

PURPOSE	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.
POLICY	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.
PROCEDURE	<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><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><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><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 & Safety Committee and the Security & Safety Manager. <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><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><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).

Subject: **HAZARDOUS MATERIALS***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**

PURPOSE	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.
POLICY	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).
PROCEDURE <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"> 1. Combustibility 2. Oxygen 3. Toxicity
<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">1. Combustible gas detection equipment,2. Oxygen test equipment,3. Toxicity test equipment,4. Self-contained air breathing equipment,5. Safety harness or wrist straps,6. Protective clothing,7. NIOSH approved face mask,8. Protective head gear,9. Portable radio.

Subject: **WORKING IN CONFINED SPACE**

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. This responsibility shall not, under any circumstances, be delegated to another worker. 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>
REFERENCES	<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.

Subject: CONTRACTOR SAFETY

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

Subject: **CONTRACTOR SAFETY**

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

Subject: CONTRACTOR SAFETY

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

Subject: CONTRACTOR SAFETY

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.

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 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
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

GENERAL CONTRACTOR OR SUB-CONTRACTOR

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

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 4	AS 3	S 2	BS 1	P 0	
Commencement of work by the contractor once the contract was awarded.							

QUALITY OF WORKMANSHIP	Rating Value	E 4	AS 3	S 2	BS 1	P 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 4	AS 3	S 2	BS 1	P 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 4	AS 3	S 2	BS 1	P 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.							



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

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

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

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

TOTAL POINTS FOR THIS CONTRACT

OVERALL RATING

(E)Excellent (A) Above Standard (S) Standard (B) Below Standard (P) Poor
 27-32 21-26 15-20 8-14 0 - 7

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 II

FORMS

FORM 1
TENDER FORM

TO: THE BOARD OF MANAGEMENT OF THE TORONTO ZOO, 361A OLD FINCH AVENUE, TORONTO, ONTARIO M1B 5K7
RE: CARIBOU CAFÉ – WASHROOM UPGRADES

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 Executive Officer or designated representative.

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 \$ _____

(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, 2019-11-29 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 Executive Officer or designated representative 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 inexercisable, 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 _____, 2019

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.

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

* 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.

ITEM	UNIT	ADD	DEDUCT
Floor Tiling	Square Foot		
Wall Tiling	Square Foot		

FORM 1
APPENDIX 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.

ITEM	DESCRIPTION	PRICE
1.	Other Architectural Items not broken out below	\$
2.	Other Mechanical Items not broken out below	\$
3.	Other Electrical Items not broken out below	\$
4.	Mobilization	\$
5.	Site Protection and Hoarding	\$
6.	All Demolition	\$
7.	Other Misc. GC Items – General Costs	\$
8.	Bonding	\$
9.	Stall Partitions	\$
10.	Trough Sink (not including fixtures) and apron below	\$
11.	<u>Cash allowance</u> for sink fixtures (faucet, soap dispenser, hand dryer combo)	<u>\$40,000.00</u>
12.	Water Closet/Toilets	\$
13.	WC Items (I.e.: toilet paper dispenser, grab bars, change table, reinstallation of step stools, napkin dispenser, coat hooks)	\$
14.	Urinals	\$
15.	Wall Tile	\$

RFT # 45 (2019-08) CARIBOU CAFÉ – WASHROOM UPGRADES
SECTION II - FORMS

16.	Floor Tile	\$
17.	Suspended Ceiling (not including lighting system) and bulkhead	\$
18.	Lighting System	\$
19.	Doors, Frames, Hardware	\$
20.	Stand-off animal outlines	\$
21.	Walls, Framing, Bulkheads	\$
22.	Painting	\$
23.	Millwork	\$
24.	Plumbing	\$
25.	HVAC	\$
26.	Power and Wiring	\$
27.	Fire Alarm and Protection	\$
28.	Makeup Air Unit Replacement and Accessories	\$
29.	Miscellaneous mechanical work (cutting, coring, patching, etc...)	\$
30.	Controls	\$
31.	Disposal	\$
32.	Cleaning	\$
33.	Demobilization	\$
34.	Any other items (that may not have been accounted for above, but noted in drawings and specifications) – please specify below if any	\$
	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.

Item	Description	Add or Deduct From Base Bid Price
-------------	--------------------	--

1. Wall mounted water closet/toilet c/w service piping, in lieu of floor mounted water closet c/w service piping
2. Supply & Install QMQB Switches, in lieu of Schneider Electric Proposal that is included within the Distribution Spec Tender Package 19064.

* 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.

Number of Item	Description of Item	Change in Bulk Tender Substituted in Work	
		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 for the past 5 (five) years- provide copy of completed CDC11-2016: Contractor's Qualification Statement.

\$	\$	\$
\$	\$	

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
)
) CARIBOU CAFÉ – WASHROOM UPGRADES
 TO WIT:) RFT #45 (2019-08)
)
)

**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.
)

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 Obligee, 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 Obligee 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 Obligee the difference in money between the amount of the price set out in the Tender and the amount for which the Obligee 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.

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 _____, 2019.

(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 _____, 2019.

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 CARIBOU CAFÉ – WASHROOM UPGRADES, RFT #45 (2019-08) (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 Obligee” as Trustee, 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, 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 Obligee, 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 Obligee;
- (b) 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 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 Obligee for all outlay, expense, liabilities, or payments, incurred or undertaken to be made by the Obligee 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 _____, 2019.

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 CARIBOU CAFÉ – WASHROOM UPGRADES, RFT#45 (2019-08), (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 Executive Officer or designated representative of the Board of Management of the Toronto Zoo (hereinafter called “the

Chief Executive 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 Executive Officer or designated representative 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 Executive Officer or designated representative 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 Executive Officer or designated representative 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 Executive Officer or designated representative 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 Executive Officer or designated representative; 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 Executive Officer or designated representative 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
)
)_____
)
)
)_____
)
)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, **2019-11-29**. 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, 2019-11-29. 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.

CLIENT:



SUB-CONSULTANTS:

telstorm

entrust:IE
ENGINEERING INC

HCC ENGINEERING
DESIGN AND TECHNOLOGY SERVICES GROUP
HCC ENGINEERING LIMITED

WASHROOM PARTITION SPECIFICATION	
MANUFACTURER:	BOCKBRICK
PRODUCT:	PRIVACY PARTITIONS
MATERIAL:	PHENOLIC
MOUNTING:	CEILING HUNG
DOORS:	GAP-FREE
HARDWARE:	STAINLESS STEEL CONCEALED
OPTIONS:	OCCUPIED/UNOCCUPIED DOOR LOCK WITH UNLOCK FROM EXTERIOR

FINISH SCHEDULE									
TAG	DESCRIPTION	MANUFACTURER	PRODUCT NUMBER	FINISH/COLOR	SIZE	SUPPLIER	PURCHASED BY	INSTALLED BY	NOTES
TL.01	FLOOR TILE	MOSCONE TILE	N/A	RENOVA GRAY MATTE	12x24	MOSCONE TILE	GC	GC	INSTALL IN BRICK PATTERN
TL.02	WALL TILE	MOSCONE TILE	N/A	OPAL TURQUOISE GLOSSY	3X12	MOSCONE TILE	GC	GC	INSTALL IN BRICK PATTERN
TL.03	WALL TILE	MOSCONE TILE	N/A	OPAL SKY GLOSSY	3X12	MOSCONE TILE	GC	GC	INSTALL IN BRICK PATTERN
TL.04	WALL TILE	MOSCONE TILE	N/A	OPAL MARINE GLOSSY	3X12	MOSCONE TILE	GC	GC	INSTALL IN BRICK PATTERN
TL.05	WALL TILE	MOSCONE TILE	N/A	GRUNGE IRON GLOSSY	3X12	MOSCONE TILE	GC	GC	INSTALL IN BRICK PATTERN
PT.01	CEILING PAINT	SHERWIN WILLIAMS	SW9060	CONNOR'S LAKEFRONT	N/A	SHERWIN WILLIAMS	GC	GC	PROVIDE 1 COAT PRIMER, 2 COATS FINISH
PT.02	BULKHEAD PAINT	SHERWIN WILLIAMS	SW9060	CONNOR'S LAKEFRONT	N/A	SHERWIN WILLIAMS	GC	GC	PROVIDE 1 COAT PRIMER, 2 COATS FINISH
PT.03	DOOR PAINT TYPE 1	SHERWIN WILLIAMS	SW7065	ARGOS	N/A	SHERWIN WILLIAMS	GC	GC	PROVIDE 1 COAT PRIMER, 2 COATS FINISH
PT.04	DOOR PAINT TYPE 2	SHERWIN WILLIAMS	SW7067	CITYSCAPE	N/A	SHERWIN WILLIAMS	GC	GC	PROVIDE 1 COAT PRIMER, 2 COATS FINISH
PT.05	SERVICE DOOR PAINT	SHERWIN WILLIAMS	SW7067	CITYSCAPE	N/A	SHERWIN WILLIAMS	GC	GC	PROVIDE 1 COAT PRIMER, 2 COATS FINISH
BS.01	BASEBOARD TILE	MOSCONE TILE	N/A	RENOVA GRAY MATTE	12X4	MOSCONE TILE	GC	GC	ENSURE TILE BASE IS COVE

EQUIPMENT SCHEDULE										
TAG	QUANTITY	DESCRIPTION	MANUFACTURER	PRODUCT NUMBER	PRODUCT	DIMENSIONS	FINISH	PURCHASED BY	INSTALLED BY	NOTES
EQ.01	11	WATER CLOSET & BF WATER CLOSET	SLOAN	2102029	FLOOR MOUNTED ADA WATER CLOSET w/ ROYAL SENSOR FLUSH METER	679x356x432mm	WHITE VITREOUS CHINA	GC	GC	PROVIDE BACK REST FOR ACCESSIBLE WATER CLOSETS
EQ.02	5	URNAL	SLOAN	70051410	SU-7009 URNINAL W/ ROYAL SENSOR FLUSHMETER	375x380x697mm	WHITE VITREOUS CHINA	GC	GC	
EQ.03	2	LAVATORY	EVERGREEN	N/A	SLIM PROFILE BOX TROUGH w/ SLOT DRAIN	LENGTH OF WALL x 558mm	POLISHED AND SEALED DRIFTWOOD			SUPPLY AND INSTALL NECESSARY SUPPORT BRACKETS CORE SINK FOR FAUCETS
EQ.04	10	FAUCET	TBD	TBD	TBD	TBD	TBD	GC	GC	WILL BE CARRIED AS AN ALLOWANCE
EQ.05a	10	DRYER	TBD	TBD	TBD	TBD	TBD	GC	GC	WILL BE CARRIED AS AN ALLOWANCE
EQ.05b	10	SOAP DISPENSER	TBD	TBD	TBD	TBD	TBD	GC	GC	WILL BE CARRIED AS AN ALLOWANCE
EQ.06	2	SIDE GRAB BAR	BOBRICK	B-5898	90 DEGREE GRAB BAR	762x762mm, 32mm DIA.	SATIN FINISH PEENED	GC	GC	
EQ.07	4	REAR GRAB BAR	BOBRICK	B-5806x24	STRAIGHT GRAB BAR	610mm LONG, 32mm DIA.	SATIN FINISH PEENED	GC	GC	
EQ.08	8	NAPKIN DISPENSER	BOBRICK	B-254	SURFACE MOUNTED NAPKIN DISPENSER	270x385x105mm	STAINLESS STEEL	GC	GC	
EQ.09	11	SURFACE MOUNTED COAT HOOK	BOBRICK	B-635	KLUTCH DEVICE HOLDER	190x228x64mm	STAINLESS STEEL	GC	GC	
EQ.10	2	BF TOILET PAPER DISPENSER	BOBRICK	B-2740	TOILET TISSUE DISPENSER FOR TWO ROLLS	N/A	STAINLESS STEEL	GC	GC	
EQ.11	9	TOILET PAPER DISPENSER	BOBRICK	B-2892	TWIN JUMBO ROLL TOILET TISSUE DISPENSER	N/A	STAINLESS STEEL	GC	GC	
EQ.12	3	CHANGE TABLE	ASI	9013-9 ROVAL	BABY CHANGE TABLE	940x648x552mm	STAINLESS STEEL	GC	GC	
EQ.13	2	KIDS PULL DOWN STEP	STEP N WASH	N/A	STEP N WASH	N/A	STAINLESS STEEL	OWNER	GC	RE-USE AND RE-INSTALL EXISTING
EQ.14	8	SHELVING	BOBRICK	B296X18	SHELF	455x205mm	STAINLESS STEEL	GC	GC	
EQ.15	2	MIRROR	N/A	N/A	SOLID PIECE MIRROR	3510mmx815mm	MIRROR	GC	GC	

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NO.	DESCRIPTION	DATE
01	SCHEMATIC DESIGN	19/03/22
02	50% REVIEW	19/04/24
03	90% REVIEW	19/05/17
04	TENDER	19/07/30

DOOR SCHEDULE										
ROOM NAME	DOOR #	WIDTH	HEIGHT	THICKNESS	DOOR MATERIAL	DOOR FINISH	FRAME MATERIAL	FRAME FINISH	FIRE RATING	COMMENTS
MALE VESTIBULE	D01	914	2134	45	HM	PT	HM	PT	N/A	
MALE WASHROOM	D02	914	2134	45	HM	PT	HM	PT	N/A	
FEMALE VESTIBULE	D03	914	2134	45	HM	PT	HM	PT	N/A	
FEMALE WASHROOM	D04	914	2134	45	HM	PT	HM	PT	N/A	
MALE WASHROOM	D05	711	2032	45	HM	PT	HM	PT	45 MIN.	

DOOR HARDWARE SPECIFICATIONS:	
INTERIOR DOORS (D02, D04):	
DOORS:	FLEMING "H SERIES DOOR" (16 GAUGE CONTINUOUS WELDED SEAMS)
FRAMES:	16 GAUGE FRAME c/w PRE-DILLED AND COUNTERSUNK ATTACHMENT HOLES
HINGES:	PRE DOOR AND FRAME FOR 4-1/2" x 4-1/2" "HAGER NRP SS HEAVY DUTY BUTT HINGES (BB1199) OR "STANLEY HINGES (FBB 199-NRP 32D). THREE PER DOOR
KICKPLATE:	DON-JO J 301 S S
PUSH PLATE:	DON-JO J 301 (S.S. PUSH PLATE)
PULL HANDLE:	FAUX DEER ANTLERS
ADO:	HORTON 4100 SERIES c/w 6-1/4" DIAMETER PLATE. SURFACE MOUNTED AND WIRELESS
ELECTRIC STRIKE:	TBD
INTERIOR DOORS (D05):	
DOORS:	FLEMING "H SERIES DOOR" (16 GAUGE CONTINUOUS WELDED SEAMS)
FRAMES:	16 GAUGE FRAME c/w PRE-DILLED AND COUNTERSUNK ATTACHMENT HOLES
HINGES:	PRE DOOR AND FRAME FOR 4-1/2" x 4-1/2" "HAGER NRP SS HEAVY DUTY BUTT HINGES (BB1199) OR "STANLEY HINGES (FBB 199-NRP 32D). THREE PER DOOR
KICKPLATE:	DON-JO J 301 S S
DOOR SWEEP:	K.N.CROWDER #W-24S
LEVER SET:	2-1/8" HOLE FOR 93 K SERIES H.D. STANLEY BEST "LEVER SET" WITH HOUSING FOR "BEST 7-PIN IC-CORE", #15 LEVER WITH "C" ROSE, 626 FINISH.
EXTERIOR DOORS (D01, D03):	
DOORS:	FLEMING "H SERIES DOOR" (16 GAUGE CONTINUOUS WELDED SEAMS)
FRAMES:	16 GAUGE FRAME c/w PRE-DILLED AND COUNTERSUNK ATTACHMENT HOLES
HINGES:	PRE DOOR AND FRAME FOR 4-1/2" x 4-1/2" "HAGER NRP SS HEAVY DUTY BUTT HINGES (BB1199) OR "STANLEY HINGES (FBB 199-NRP 32D). THREE PER DOOR
WEATHER STRIPPING:	K.N.CROWDER #13
THRESHOLD:	K.N. CROWDER #CT-11
DOOR SWEEP:	K.N.CROWDER #W-24S
VINYL CAPS:	TOP OF DOOR RAIN CAP
LOCKS:	2-3/4" BACKSET HOLE PRE DRILLED FOR STANLEY BEST SERIES LOCKS
KICKPLATE:	DON-JO J 301 S S
PUSH PLATE:	DON-JO J 301 (S.S. PUSH PLATE)
PULL HANDLE:	FAUX DEER ANTLERS
ADO:	HORTON 4100 SERIES c/w 6-1/4" DIAMETER PLATE. SURFACE MOUNTED AND WIRELESS
DEADBOLT:	TUBLAR DEADBOLT, BEST 83T 7S-STK-626, 1200mm HIGH ON CENTRE
ELECTRIC STRIKE:	TBD

TORONTO ZOO	
361A OLD FINCH AVE TORONTO, ONTARIO, M1B 5K7	
WASHROOM UPGRADES - CARIBOU CAFE	
SCHEDULES	
Project number	2019-06
Date	2019-07-30
Drawn by	M.FAULDS
Checked by	J HORVATH
A002	
Scale	

CLIENT:

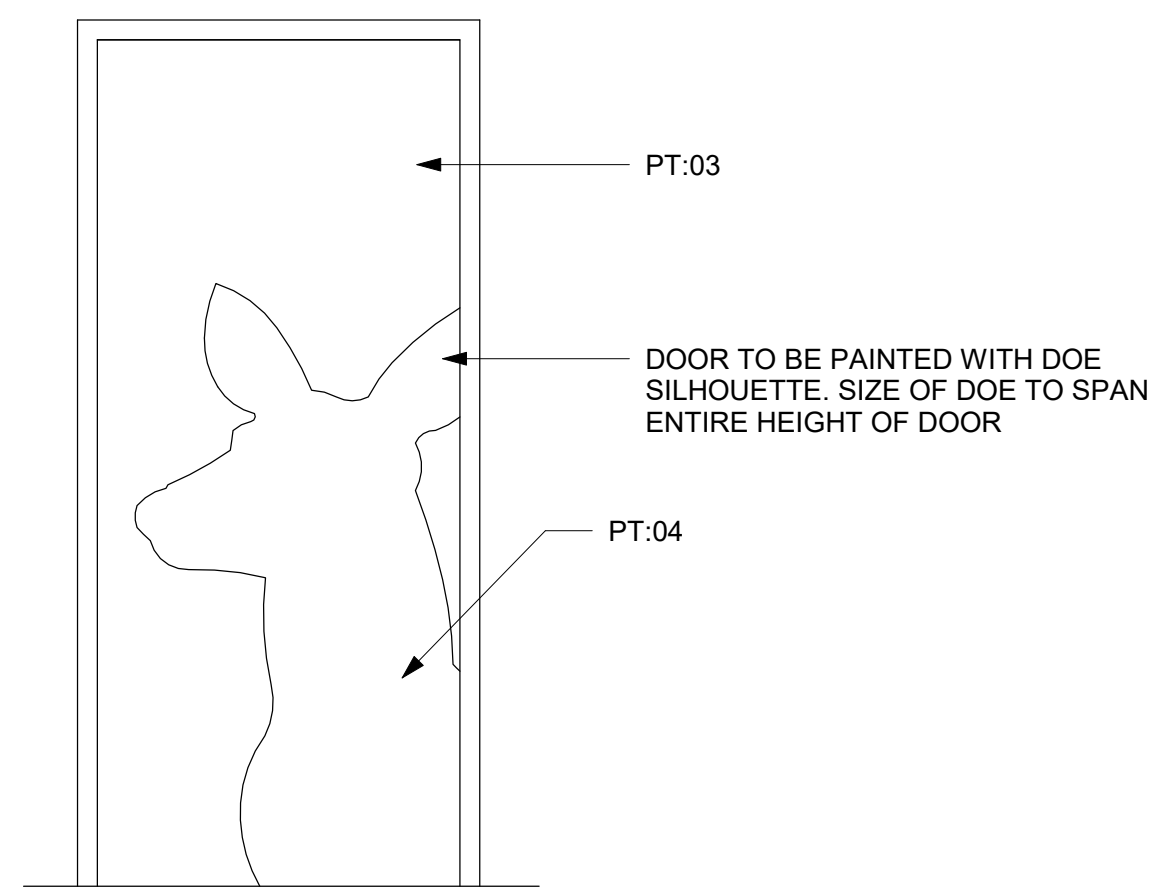


SUB-CONSULTANTS:

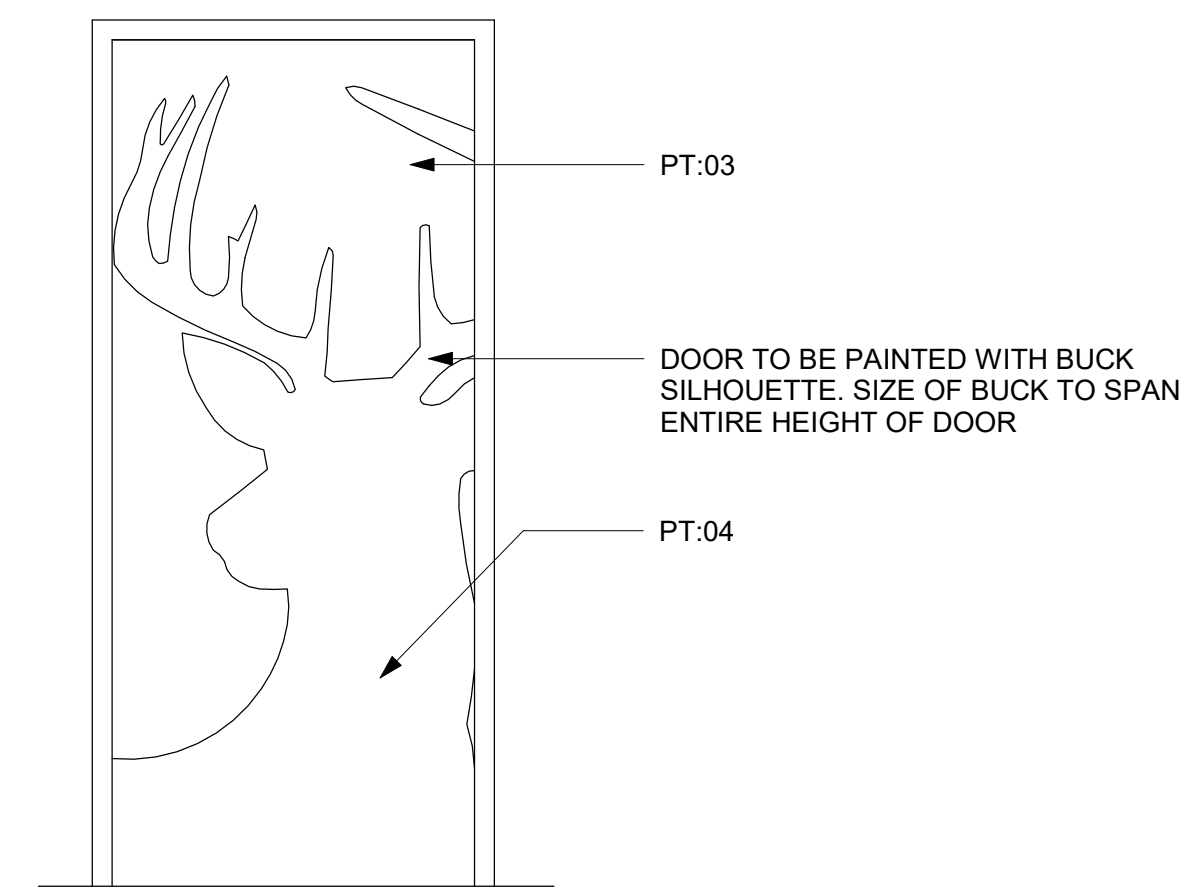


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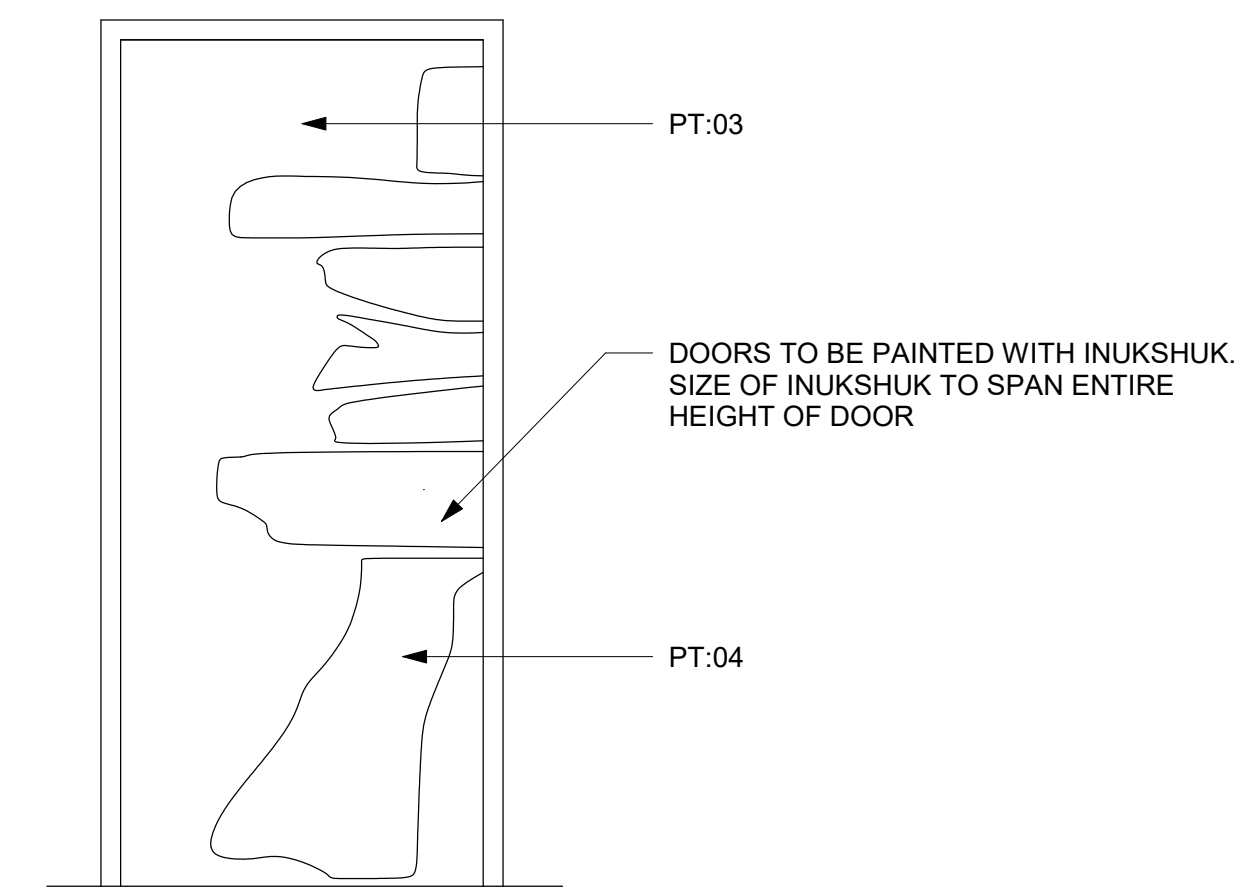
NO.	DESCRIPTION	DATE
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EXTERIOR FEMALE DOOR IMAGERY



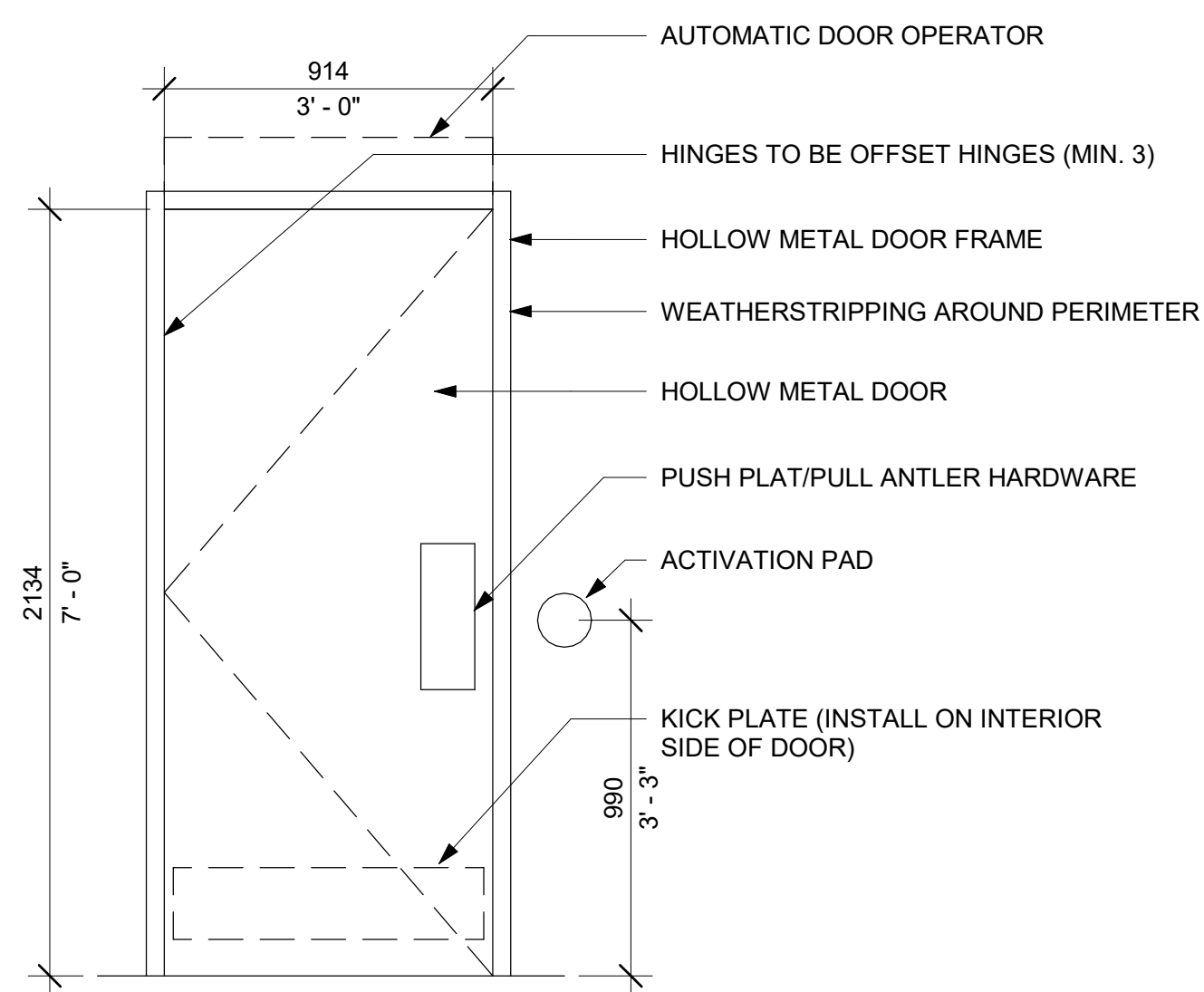
EXTERIOR MALE DOOR IMAGERY



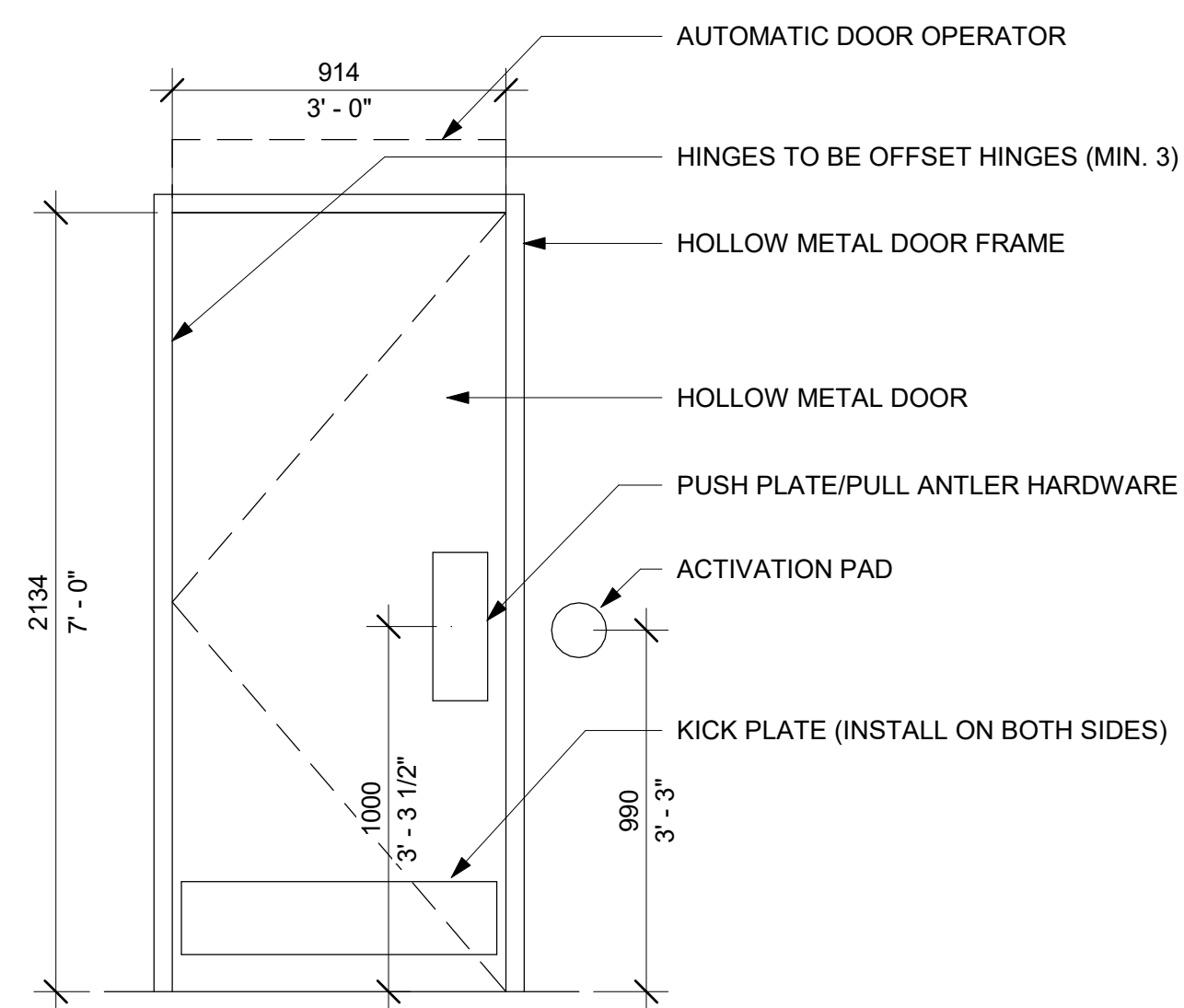
INTERIOR DOOR IMAGERY

NOTES:

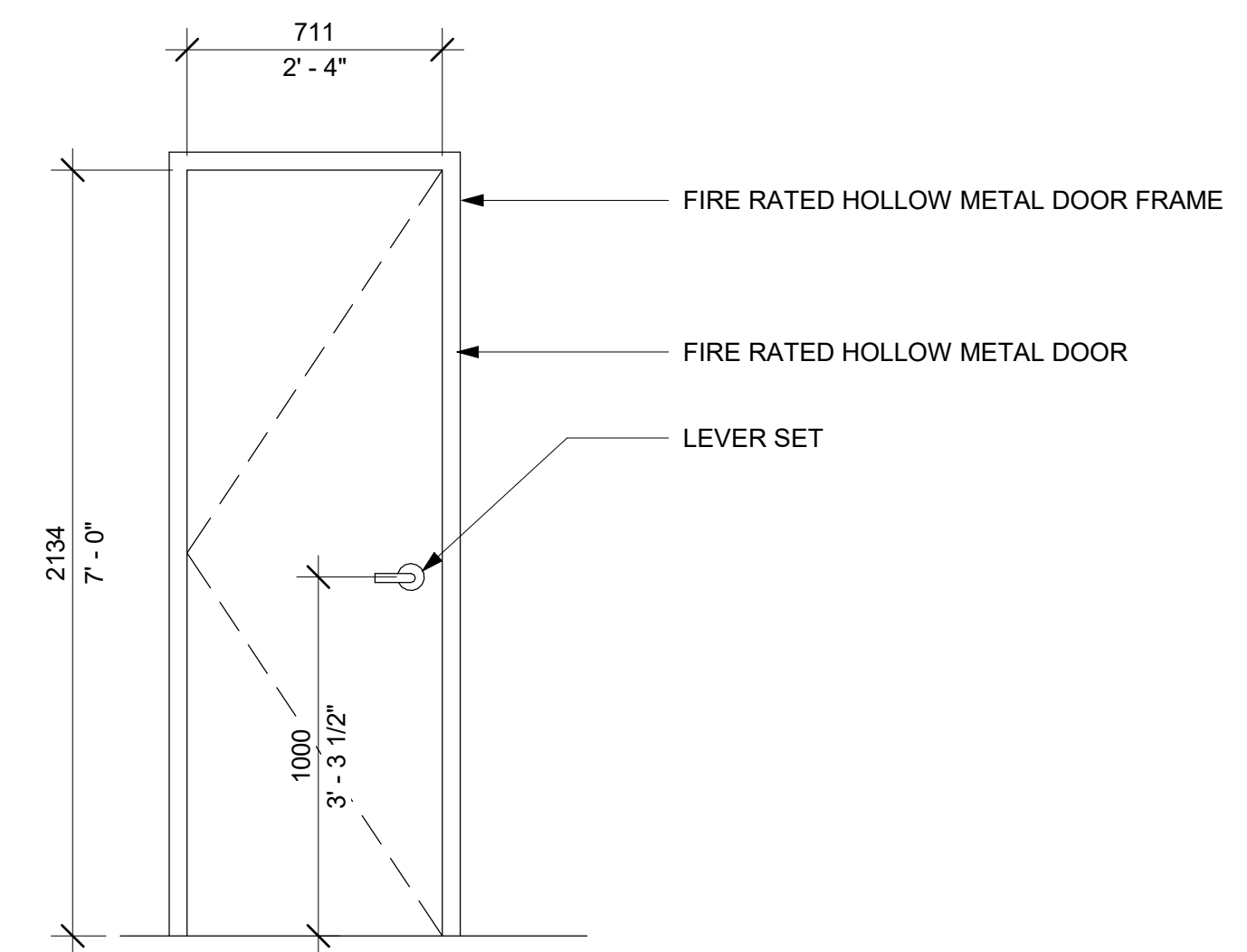
- DOORS ARE TO BE PAINTED WITH AN INUKSHUK ON BOTH SIDES OF INTERIOR DOORS D02 AND D04. DOE AND BUCK TO BE PAINTED ON BOTH SIDES OF EXTERIOR DOORS D01 AND D03. REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION. CONTRACTOR TO PROVIDE DESIGN FOR CONSULTANT APPROVAL PRIOR TO APPLICATION. REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.
- DOOR PULL HANDLE TO BE OF A FUAUX ANTLER DESIGN. REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.
- SIGNAGE BY OTHERS



DOOR D01 AND D03



DOOR D02 AND D04



DOOR D05

DOOR ELEVATIONS

1 : 20

TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

DOOR ELEVATIONS

Project number	2019-06
Date	2019-07-30
Drawn by	M.FAULDS
Checked by	J HORVATH

A003

Scale 1 : 20

CLIENT:



SUB-CONSULTANTS:



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TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

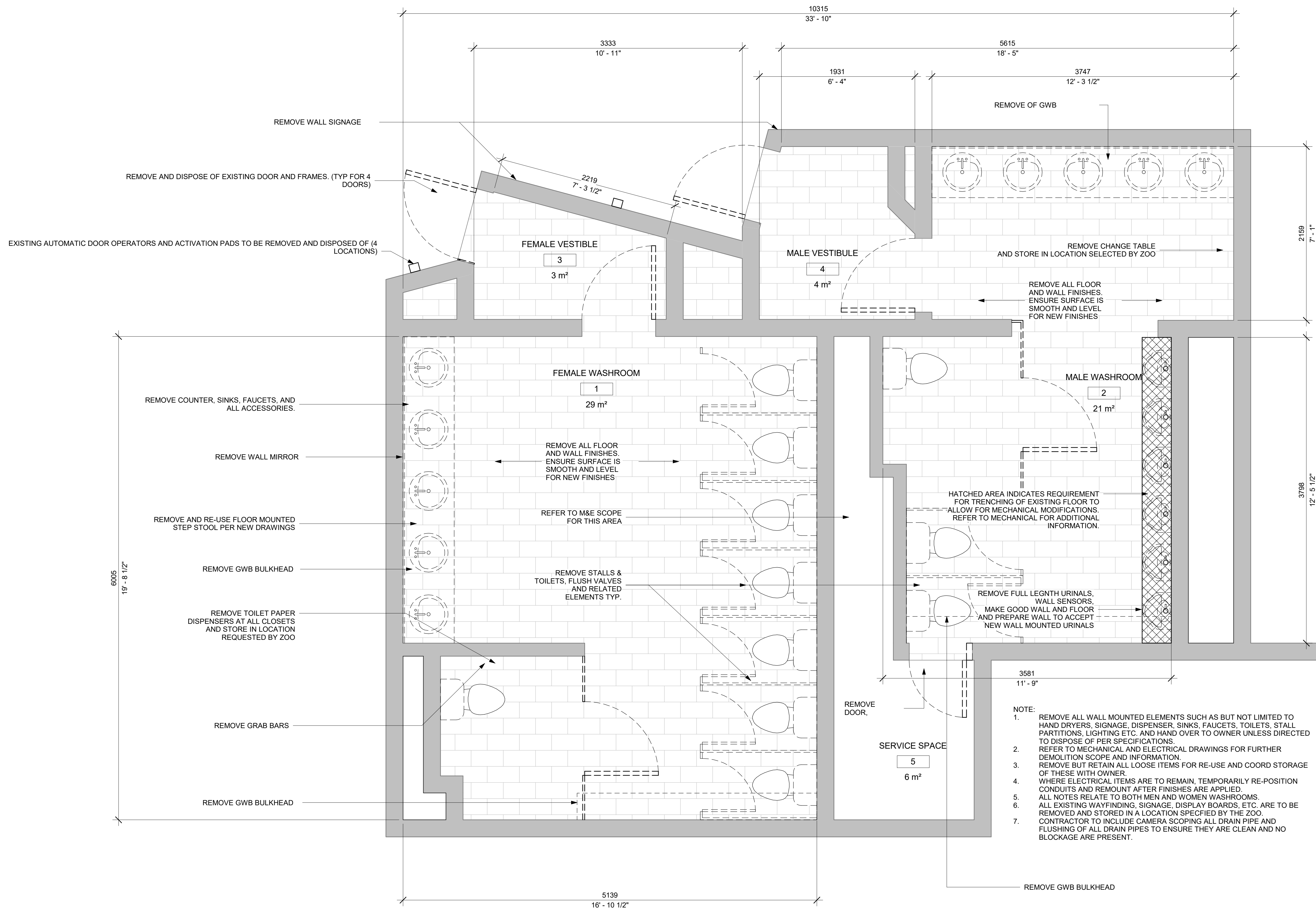
DEMOLITION PLAN

Project number	2019-06
Date	2019-07-30
Drawn by	M.FAULDS
Checked by	J HORVATH

A101

Scale 1 : 25

31-Jul-19 7:40:24 PM



CLIENT:



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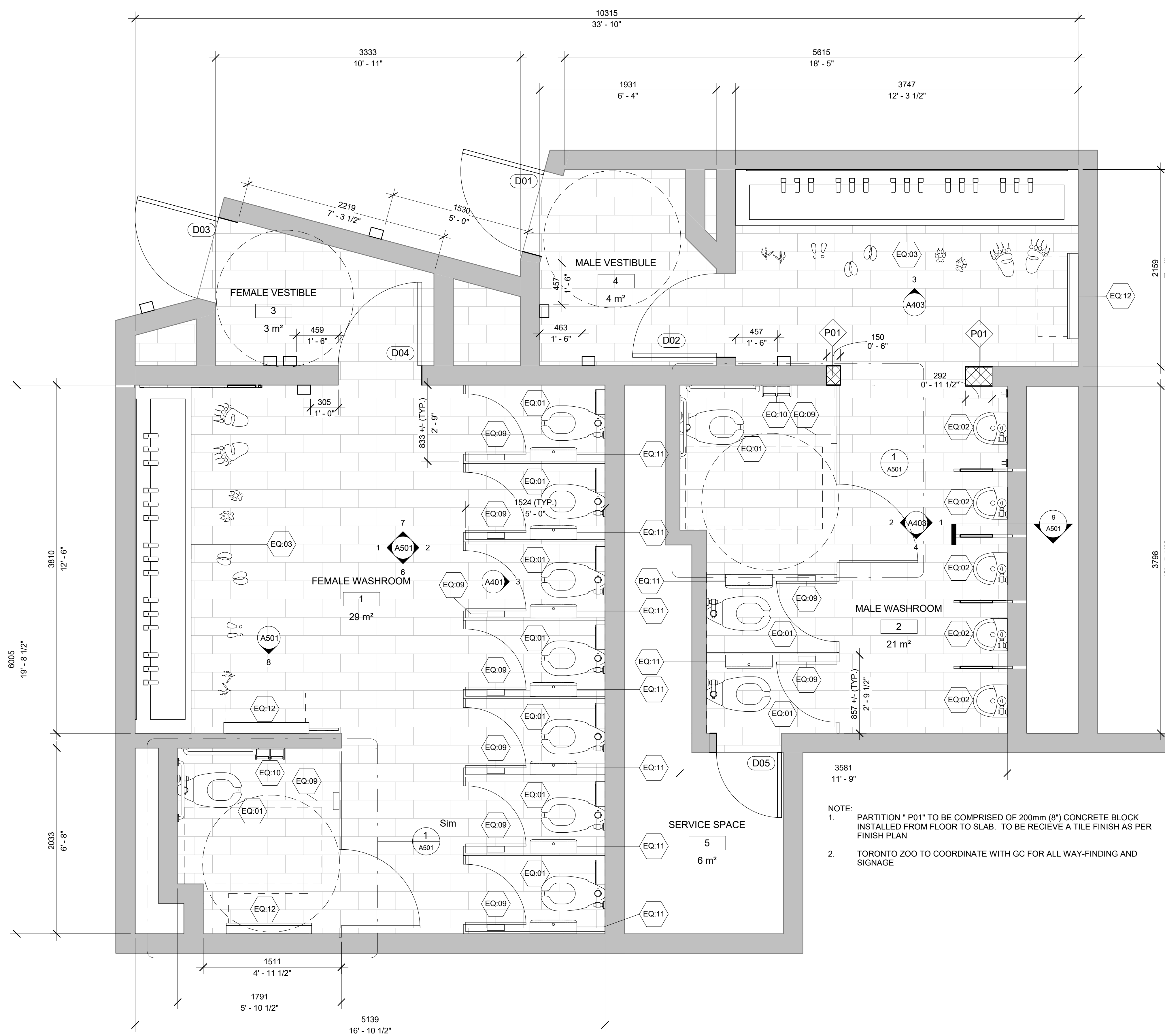
TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

PROPOSED PLAN

Project number	2019-06
Date	2019-07-30
Drawn by	M.FAULDS
Checked by	J HORVATH

A201

Scale 1 : 25



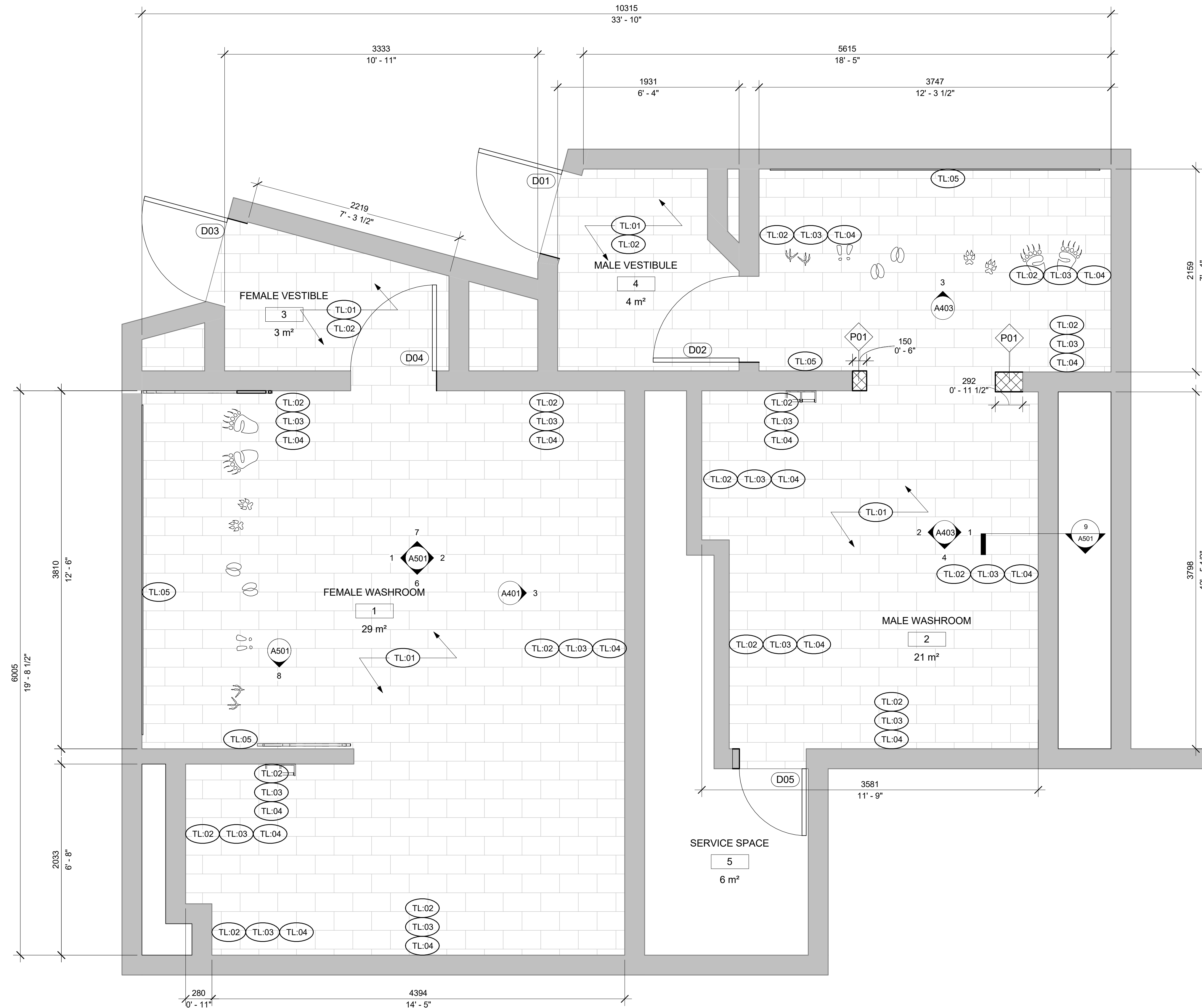
NOTE:
 1. PARTITION "P01" TO BE COMPRISED OF 200mm (8") CONCRETE BLOCK INSTALLED FROM FLOOR TO SLAB. TO BE RECIEVE A TILE FINISH AS PER FINISH PLAN
 2. TORONTO ZOO TO COORDINATE WITH GC FOR ALL WAY-FINDING AND SIGNAGE



FOOT PRINT DETAILS

1 : 10

NOTE: ALL FOOT PRINTS ARE TO BE LASER ETCHED INTO TILE FLOORING.



SUB-CONSULTANTS:

telstorm
entrust:IE
 ENGINEERING INC

HCC ENGINEERING
 DESIGN AND TECHNOLOGY SERVICES GROUP
 HCC ENGINEERING LIMITED

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04	TENDER	19/07/30

TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

FINISH PLAN

Project number	2019-06
Date	2019-07-30
Drawn by	M.FAULDS
Checked by	J HORVATH

A202

Scale As indicated



SUB-CONSULTANTS:



HCC ENGINEERING
 DESIGN AND TECHNOLOGY SERVICES GROUP
 HCC ENGINEERING LIMITED

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TORONTO ZOO
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REFLECTED CEILING PLAN

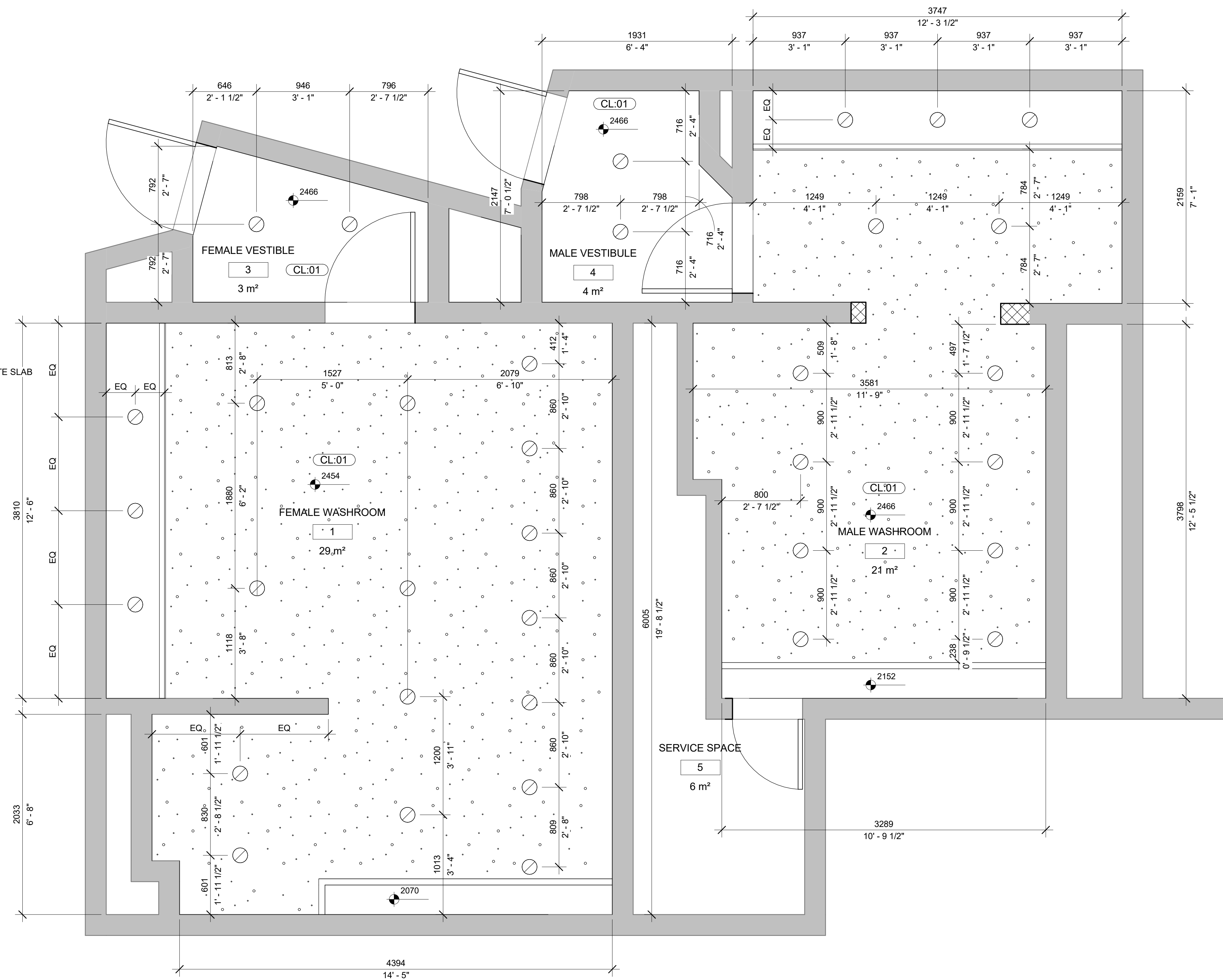
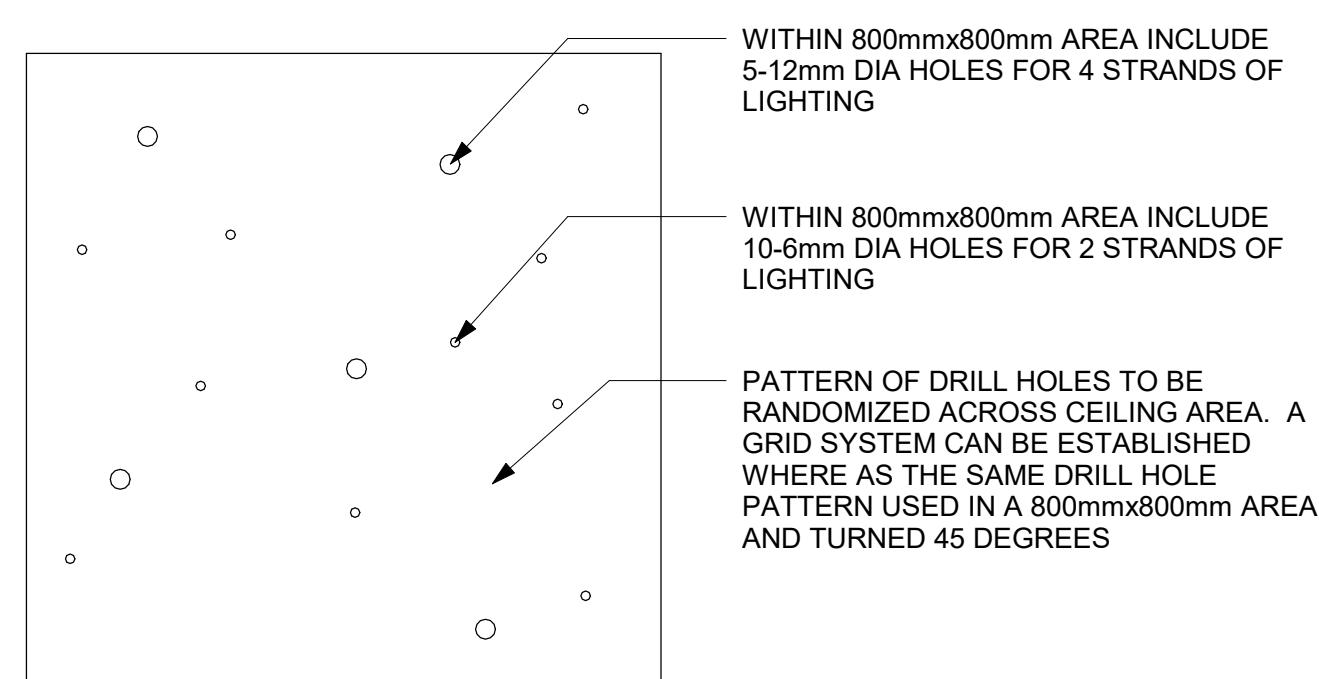
Project number	2019-06
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Drawn by	M.FAULDS
Checked by	J HORVATH

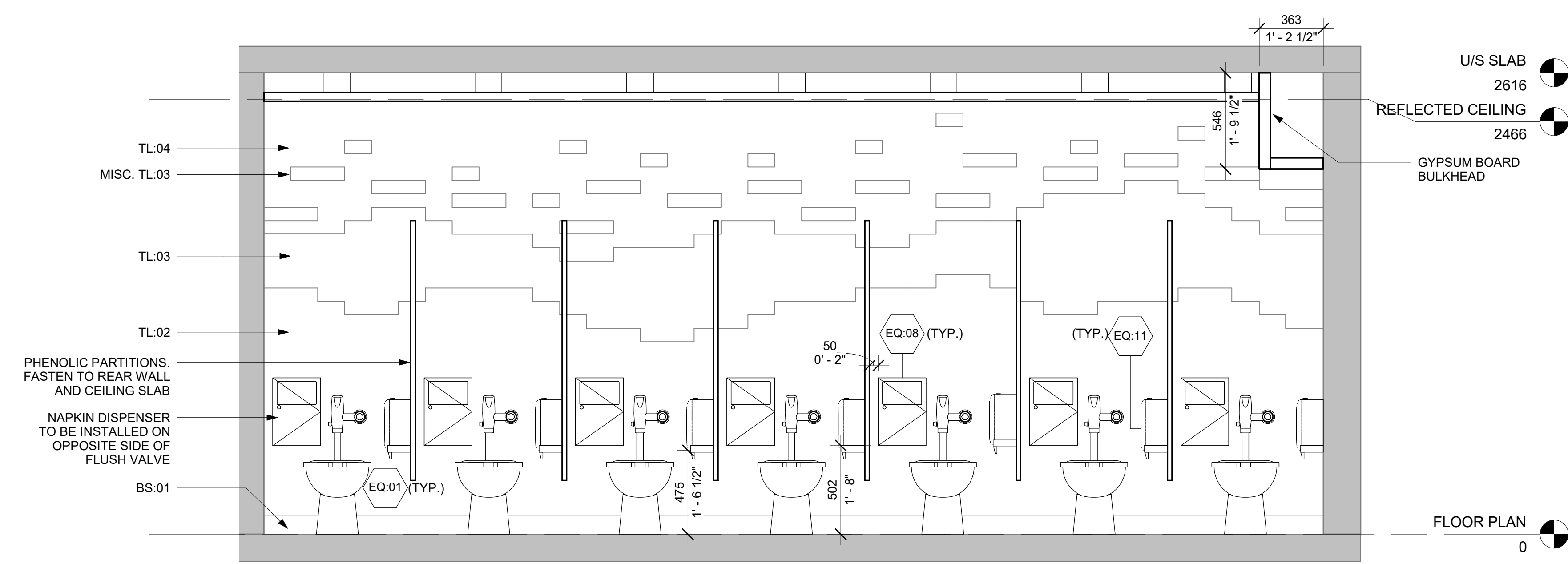
A203

Scale As indicated

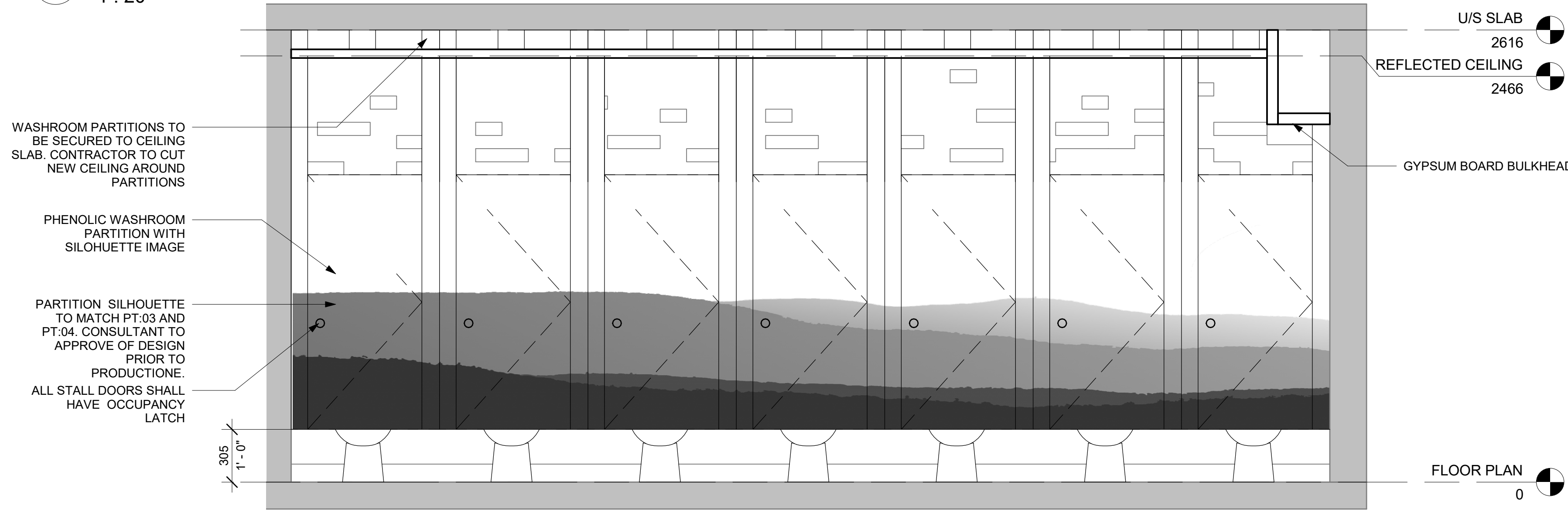
CEILING SCHEDULE

- CEILING "CL:01"
- 150mm STEEL STUDS @ 400mm. FASTENED TO CONCRETE SLAB
 - 12.7mm GYPSUM WALL BOARD

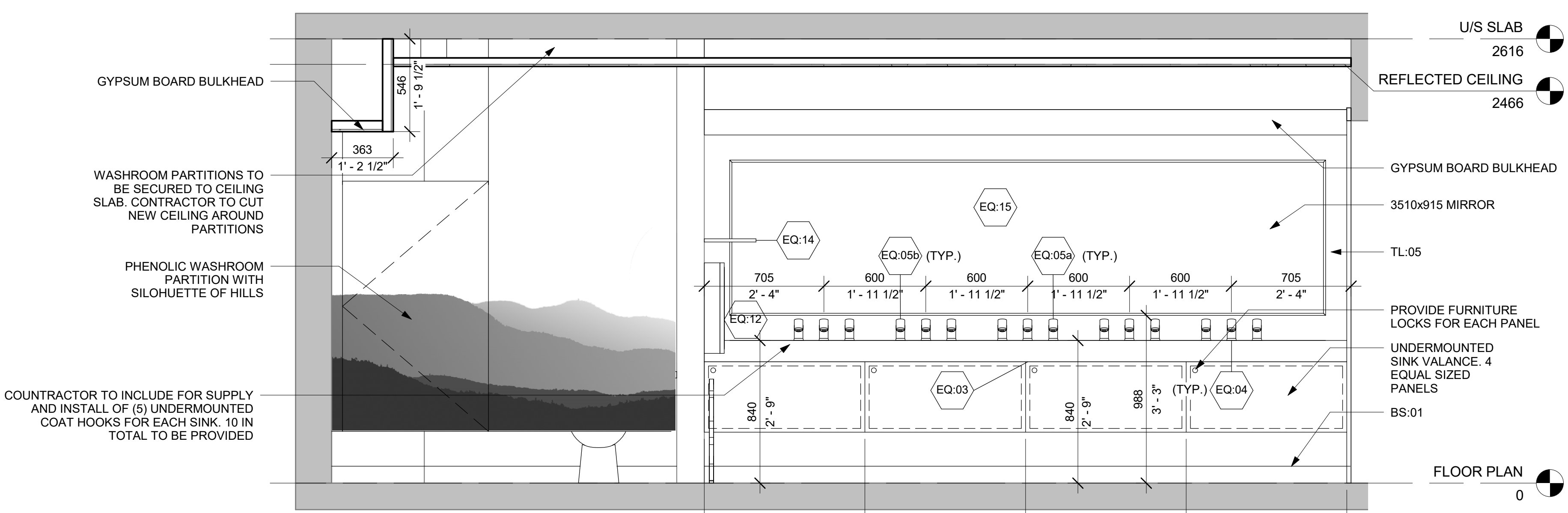




3 ELEV-FEMALE STALLS 2
 1 : 20



2 ELEV-FEMALE STALLS
 1 : 20



1 ELEV-FEMALE SINK
 1 : 20

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ELEVATIONS WOMEN

Project number 2019-06
 Date 2019-07-30
 Drawn by M.FAULDS
 Checked by J HORVATH

A401

Scale 1 : 20

CLIENT:



SUB-CONSULTANTS:

telstorm

entrust: E
ENGINEERING INC

HCC ENGINEERING
DESIGN AND TECHNOLOGY SERVICES GROUP
HCC ENGINEERING LIMITED

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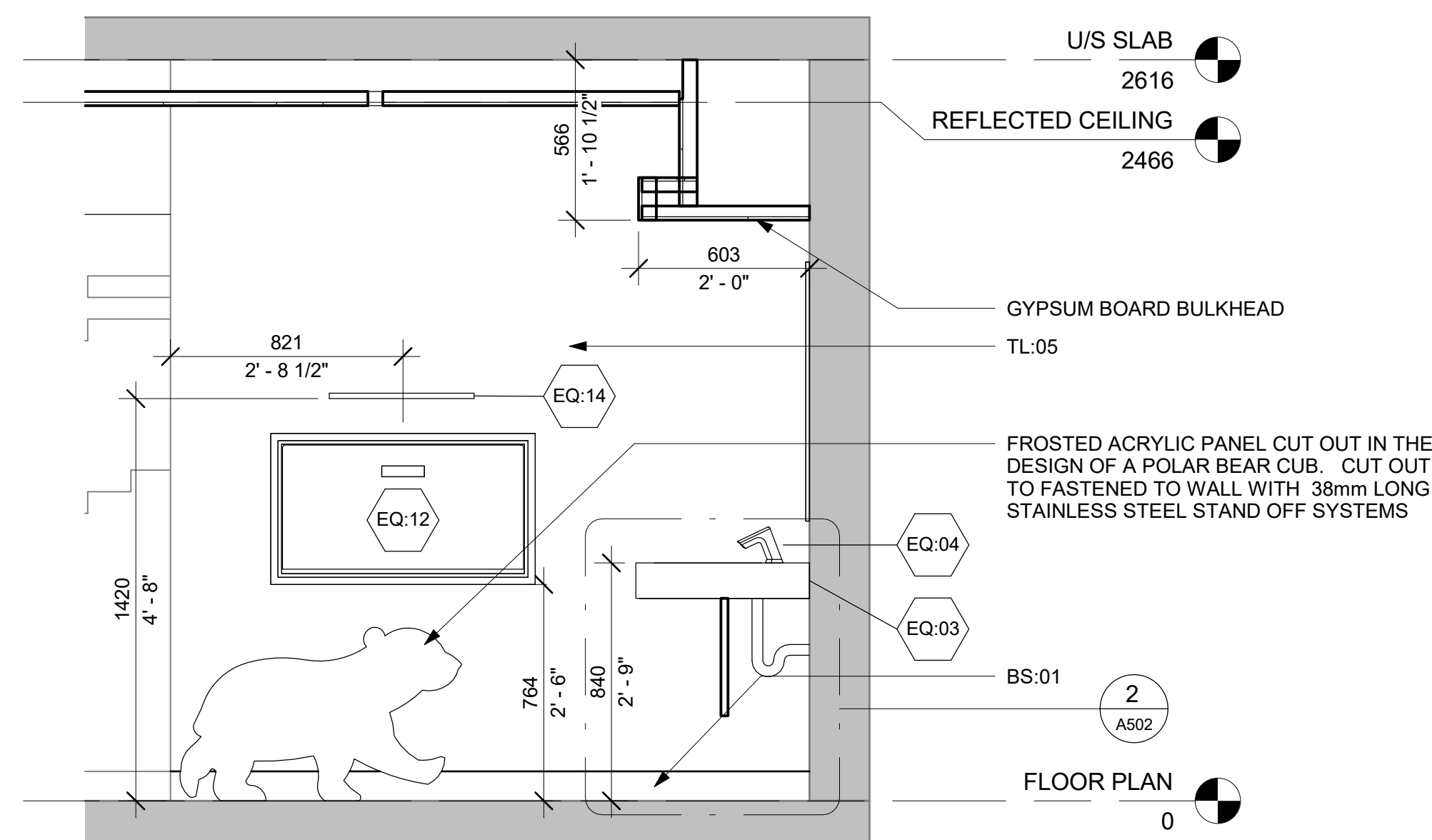
TORONTO ZOO
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**ELEVATIONS
WOMEN**

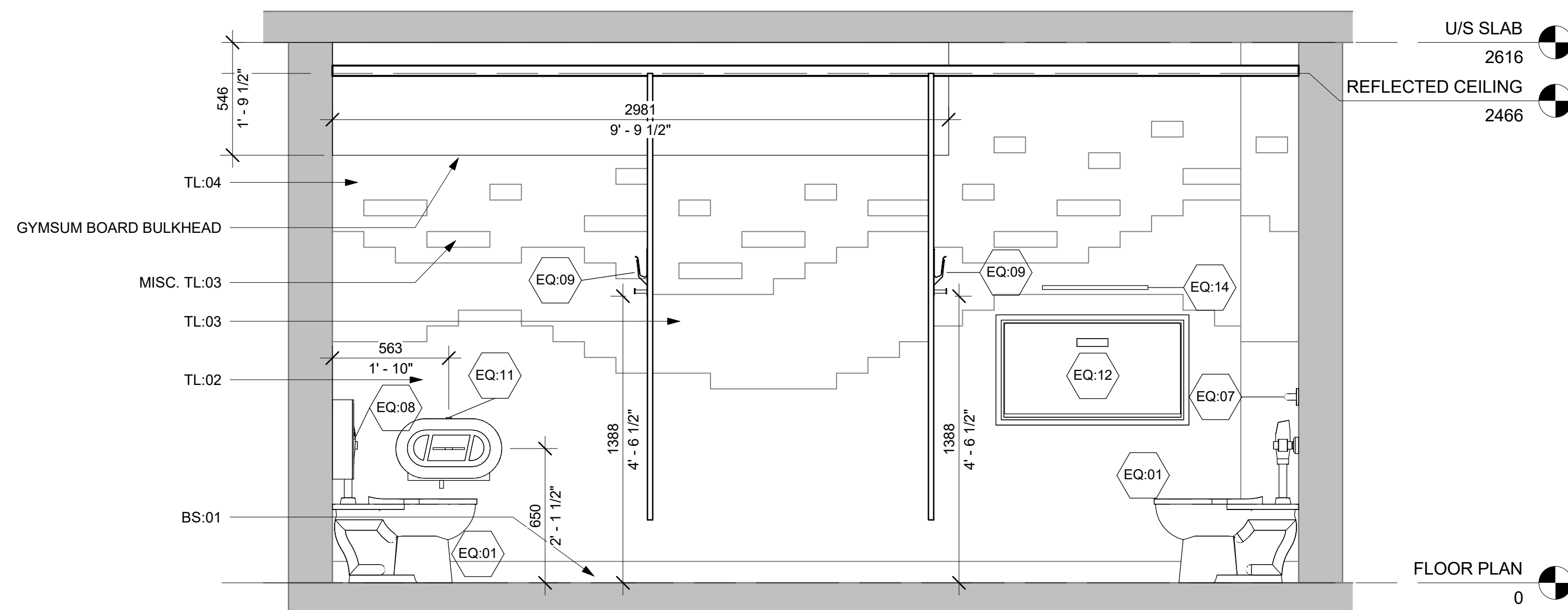
Project number 2019-06
 Date 2019-07-30
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 Checked by J HORVATH

A402

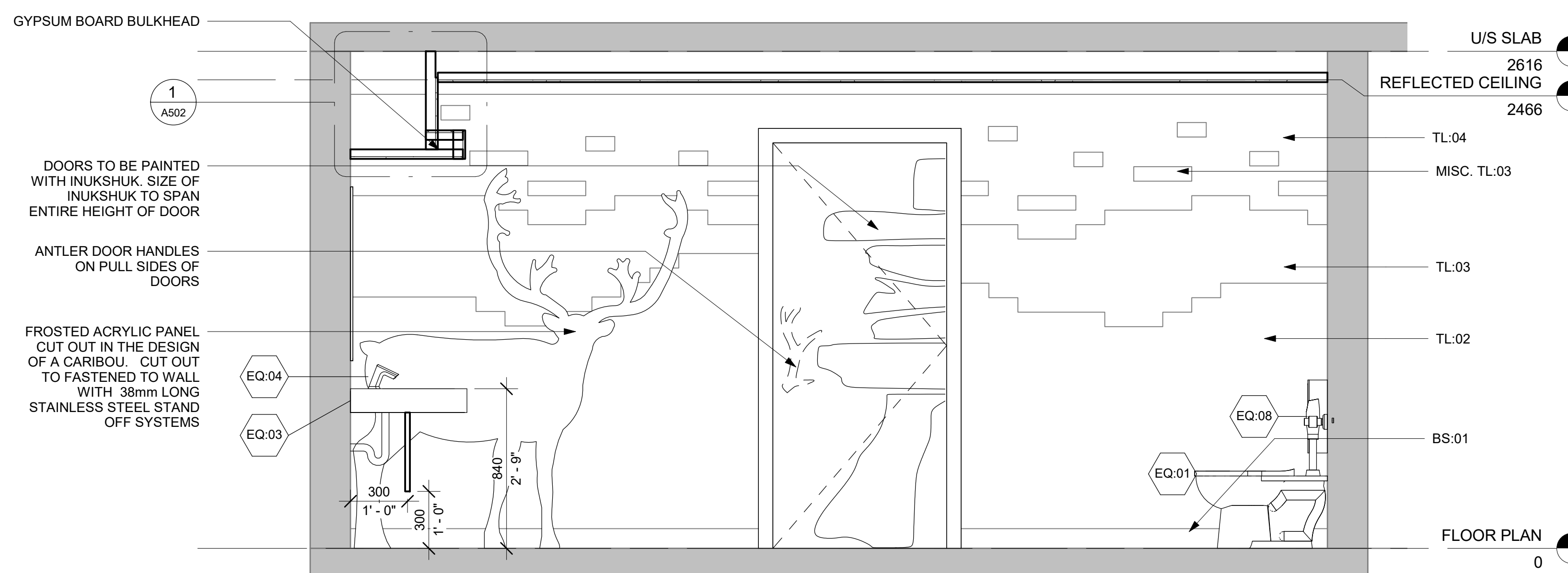
Scale 1 : 20



6 ELEV-FEMALE SINK DETAIL
1 : 20



5 ELEV-FEMALE WALL
1 : 20



4 ELEV-FEMALE DOOR
1 : 20

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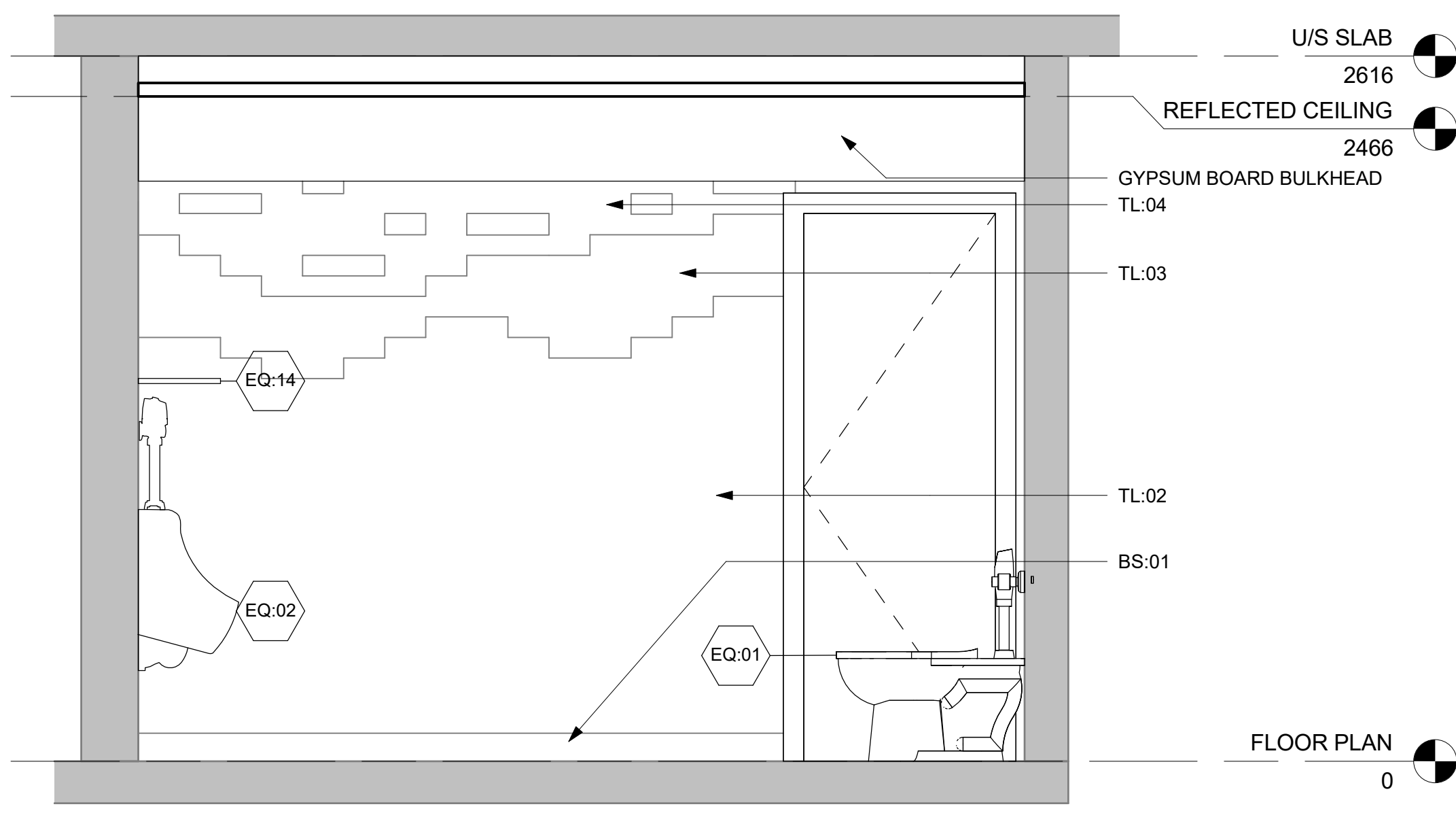
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TORONTO ZOO
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ELEVATIONS MEN

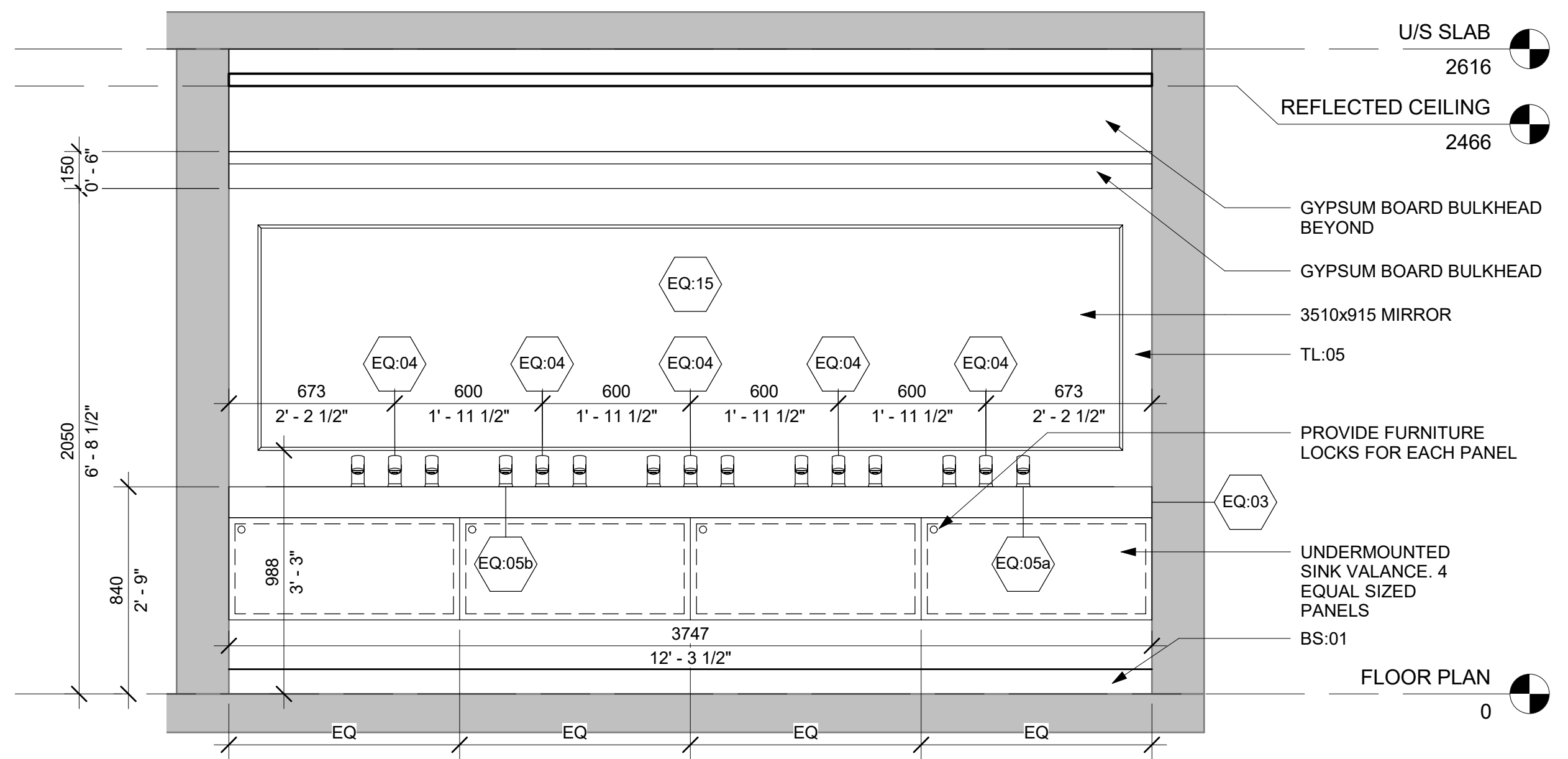
Project number	2019-06
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A403

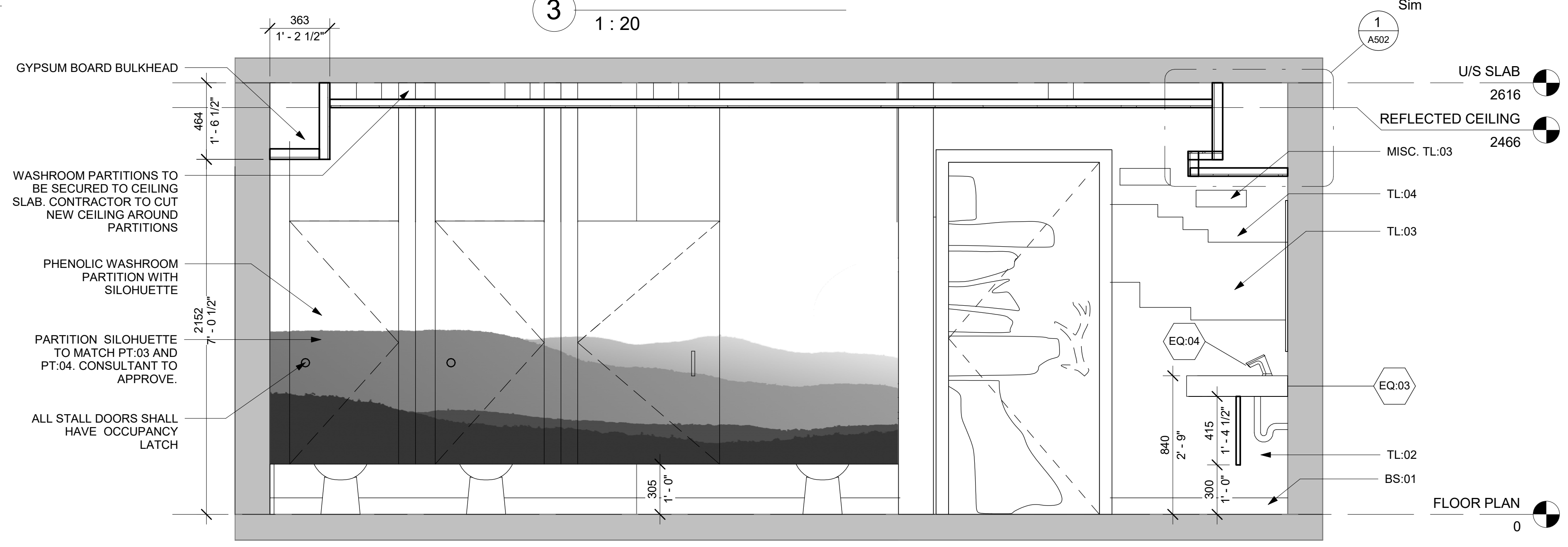
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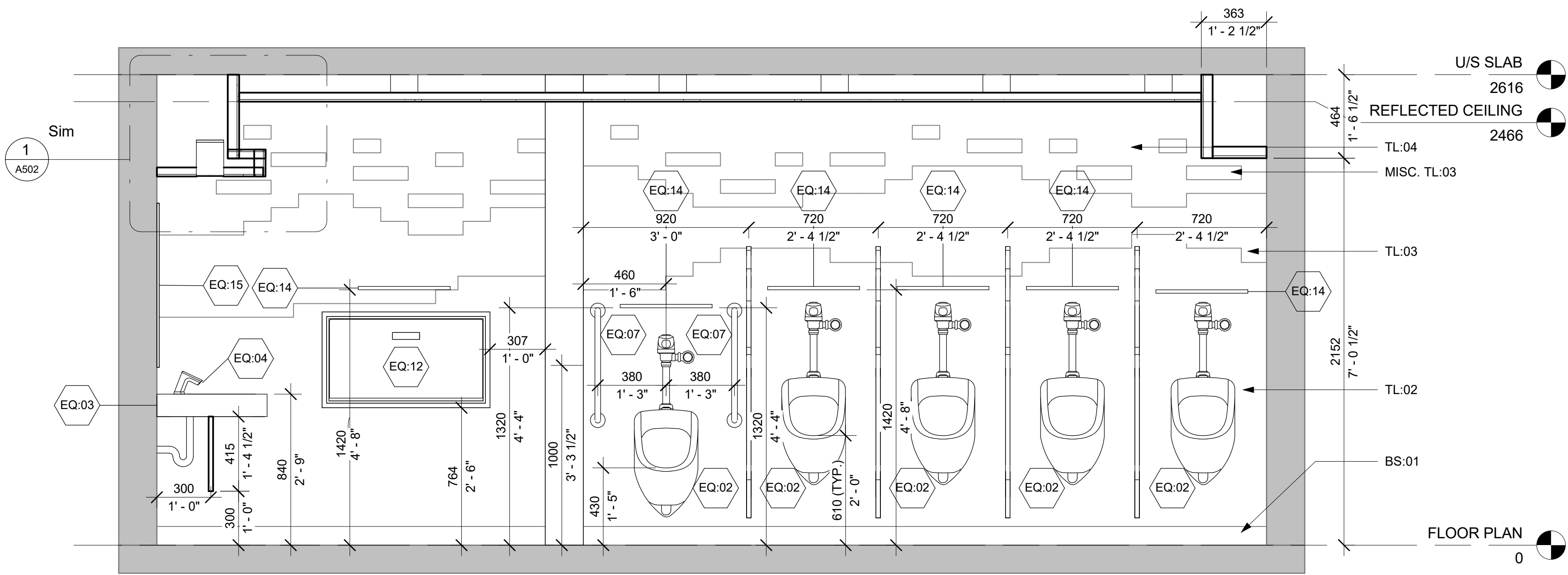
4 ELEV-MALE WALL
1 : 20



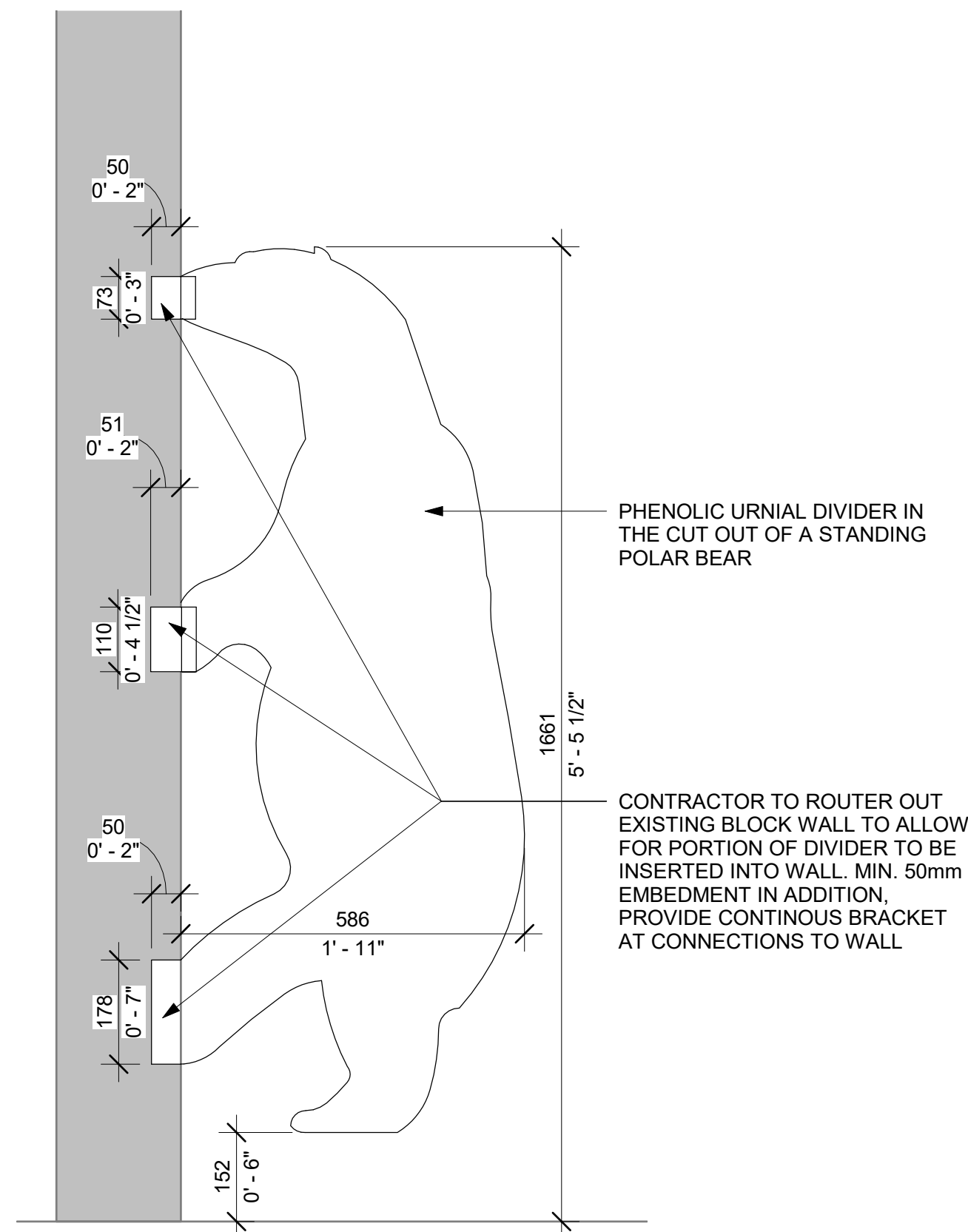
3 ELEV-MALE SINK
1 : 20



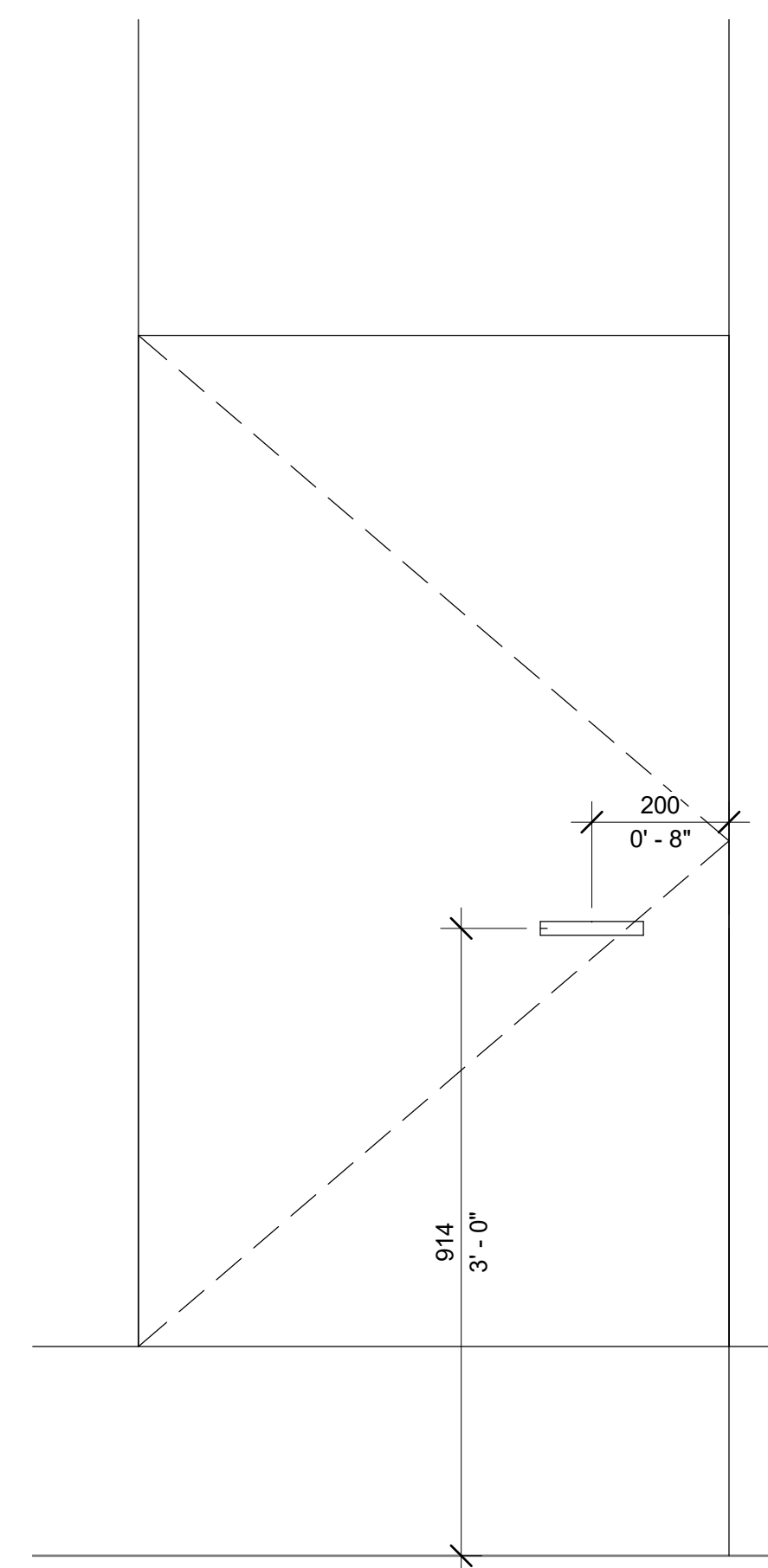
2 ELEV-MALE STALLS
1 : 20



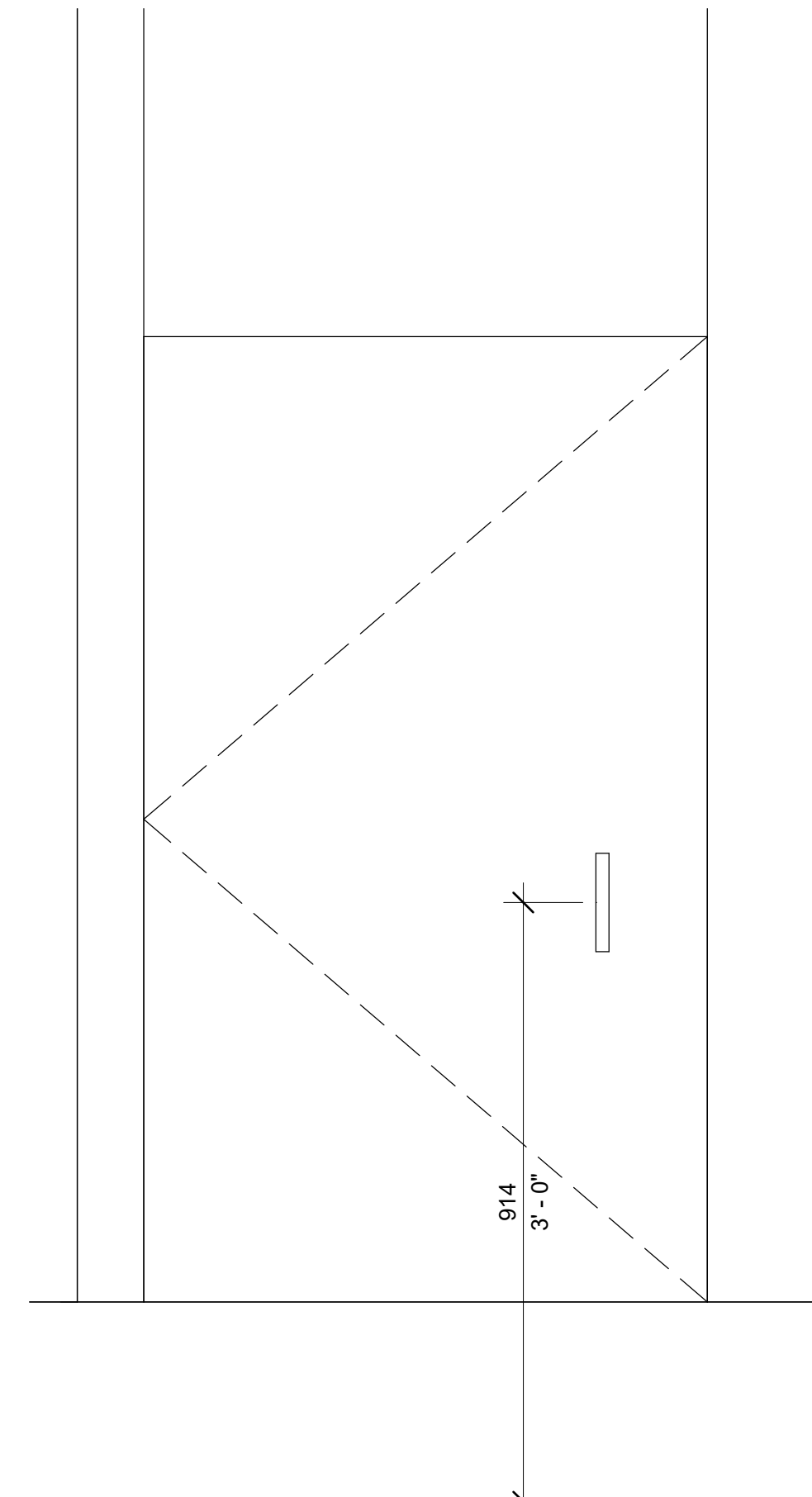
1 ELEV-MALE URINAL
1 : 20



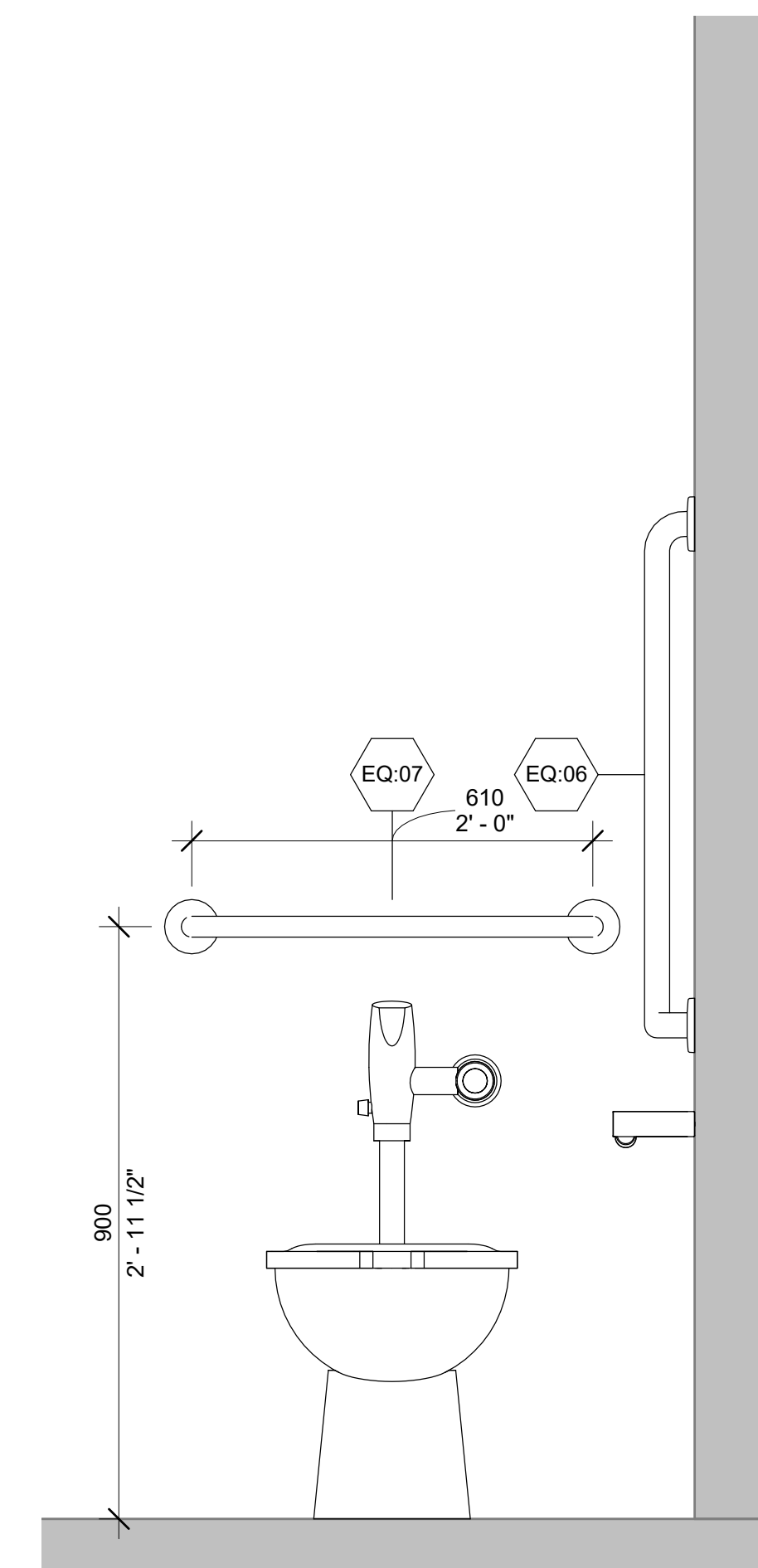
9 SECT-URINAL DIV.
1:10



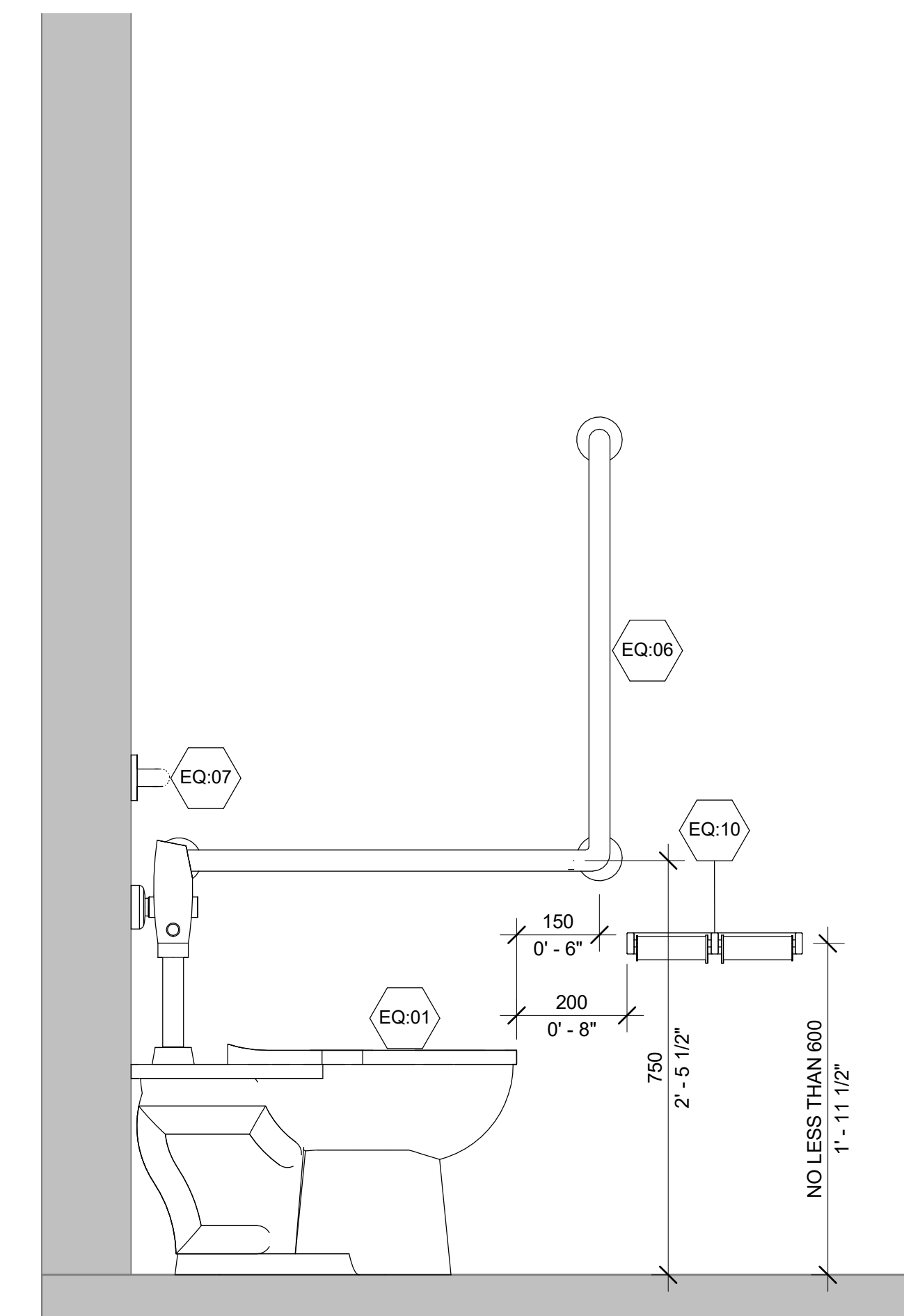
5 BF STALL INT ELEV.
1:10



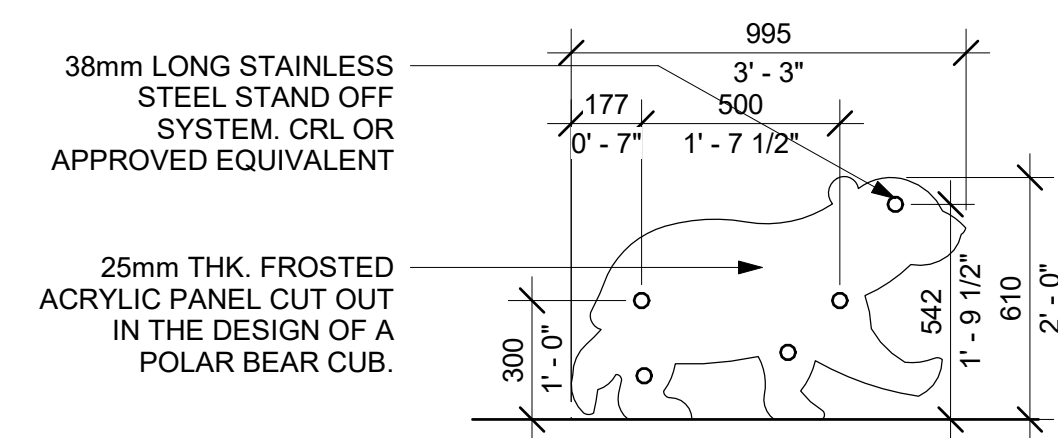
4 BF STALL EXT ELEV.
1:10



3 BF STALL REAR ELEV.
1:10

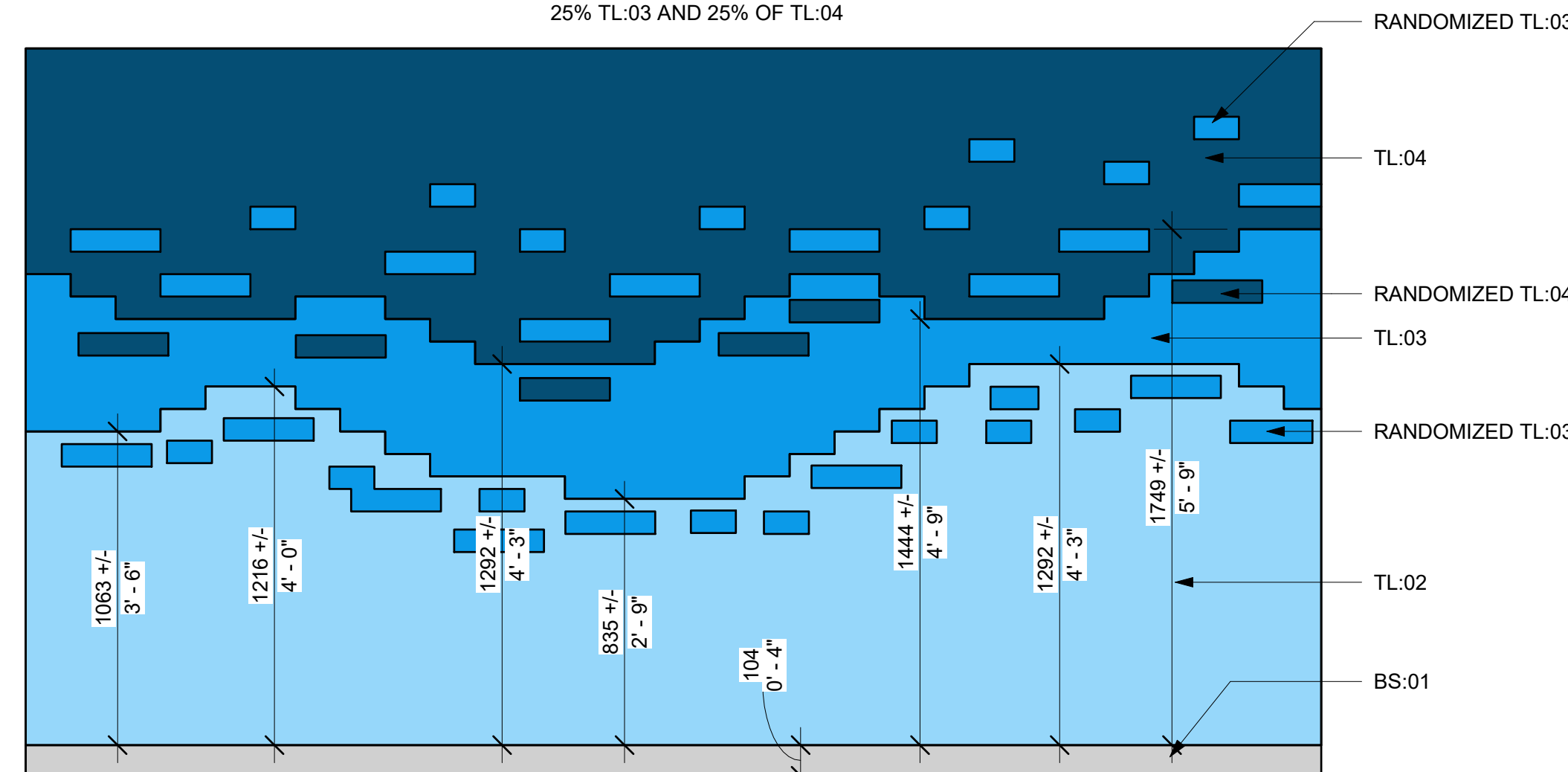


2 BF STALL SIDE ELEV.
1:10

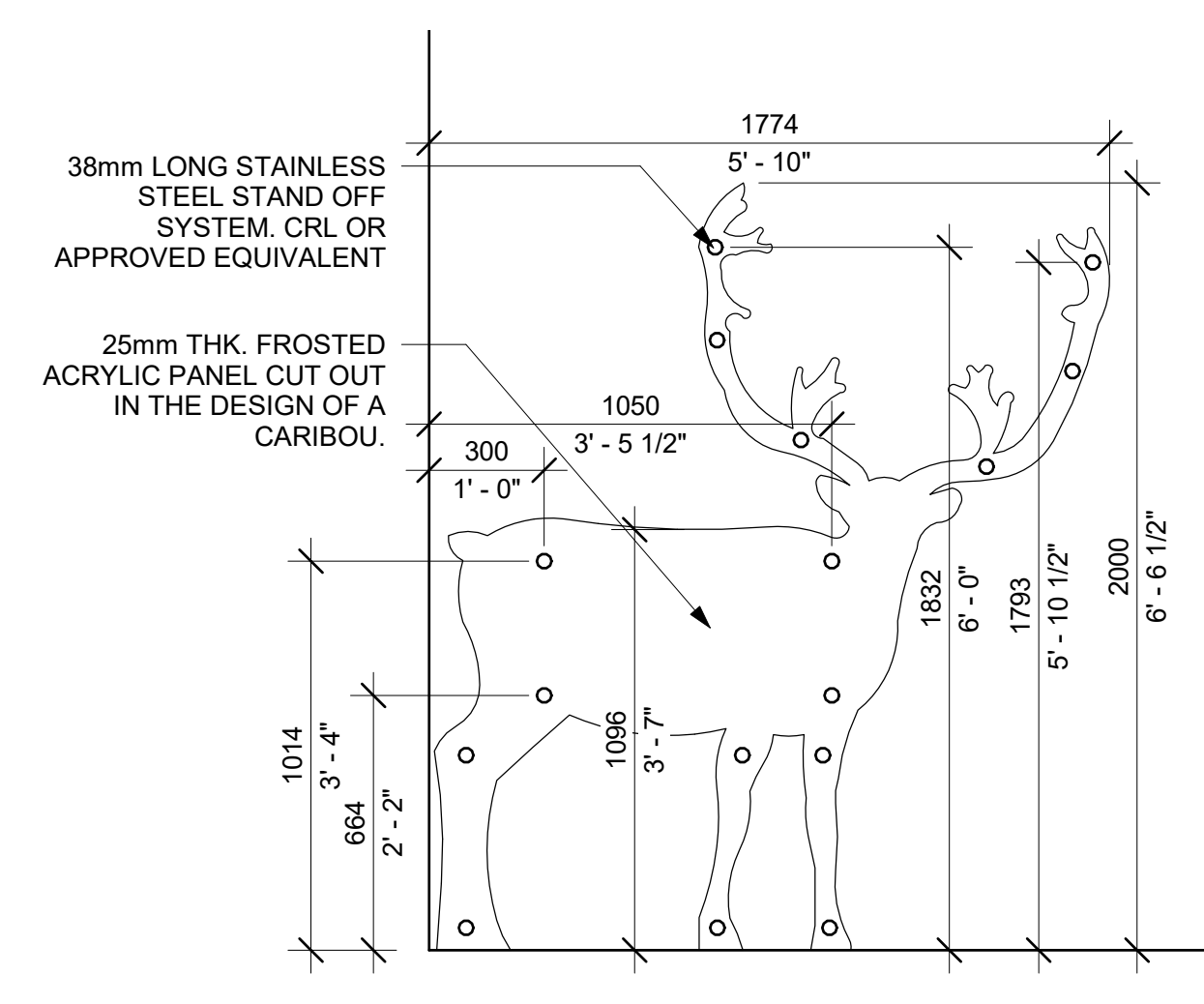


8 ELEV-POLAR BEAR
1:20

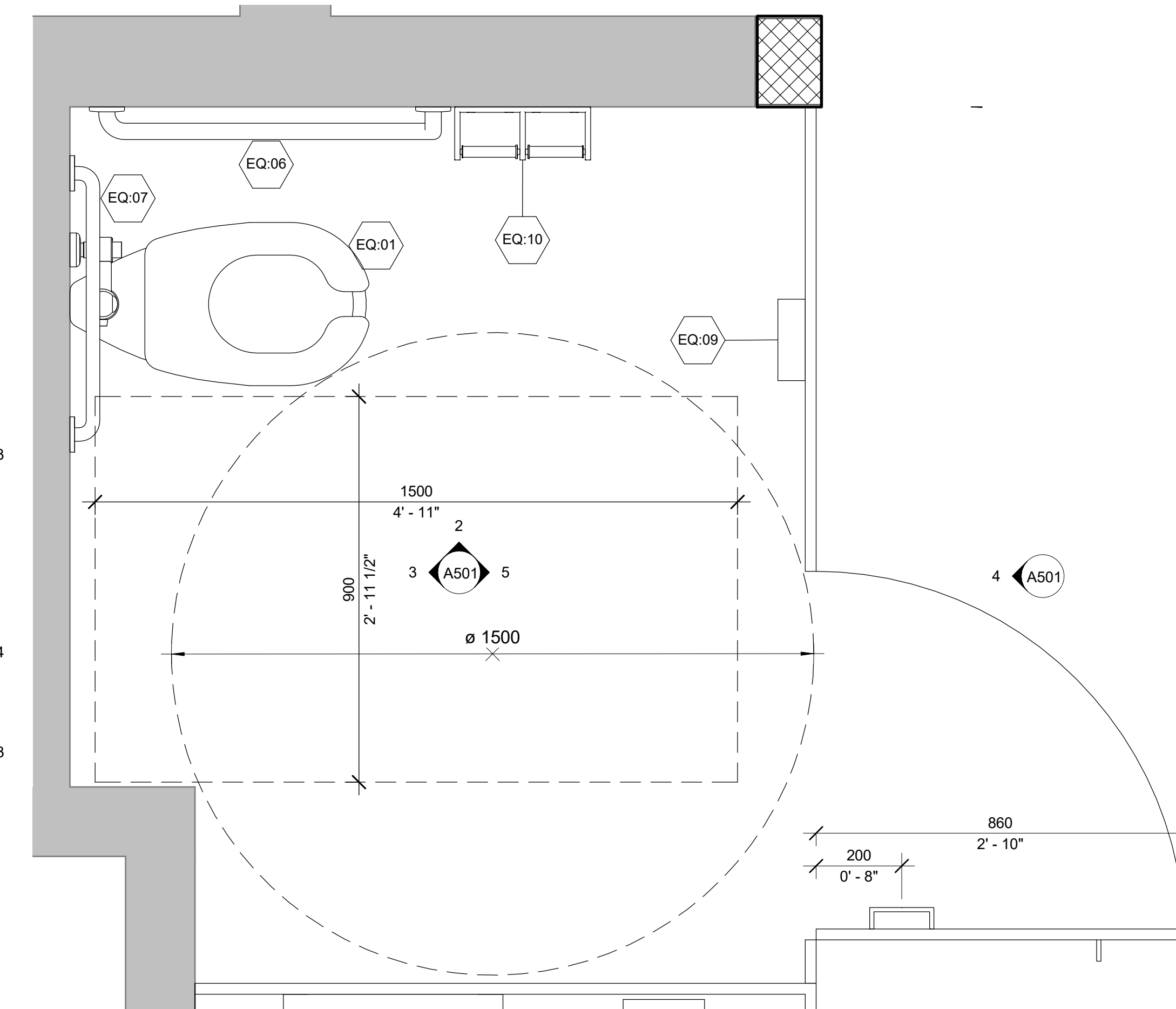
INTENT OF TILE PATTERN IS TO GIVE THE APPEARANCE OF A SUNSET OVER THE TUNDRA. THE TILES ARE OF A LIGHTER COLOUR FROM THE GROUND AND DARKEN AS IT REACHES THE CEILING. THE PATTERN AND LAYOUT OF THE TILE ARE TO BE IN A GRADIENT AND SPARADIC PATTERN. PRICE QUANTITY OF TILES ON WALLS WITH GRADIENT AS 50% TL:02, 25% TL:03 AND 25% OF TL:04



6 ELEV-TYP. GRADIENT
1:20



7 ELEV-DEER
1:20



1 BARRIER FREE STALL
1:10

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TORONTO ZOO
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 WASHROOM UPGRADES - CARIBOU CAFE

DETAILS

Project number	2019-06
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Drawn by	M.FAULDS
Checked by	J HORVATH

A501

Scale As indicated

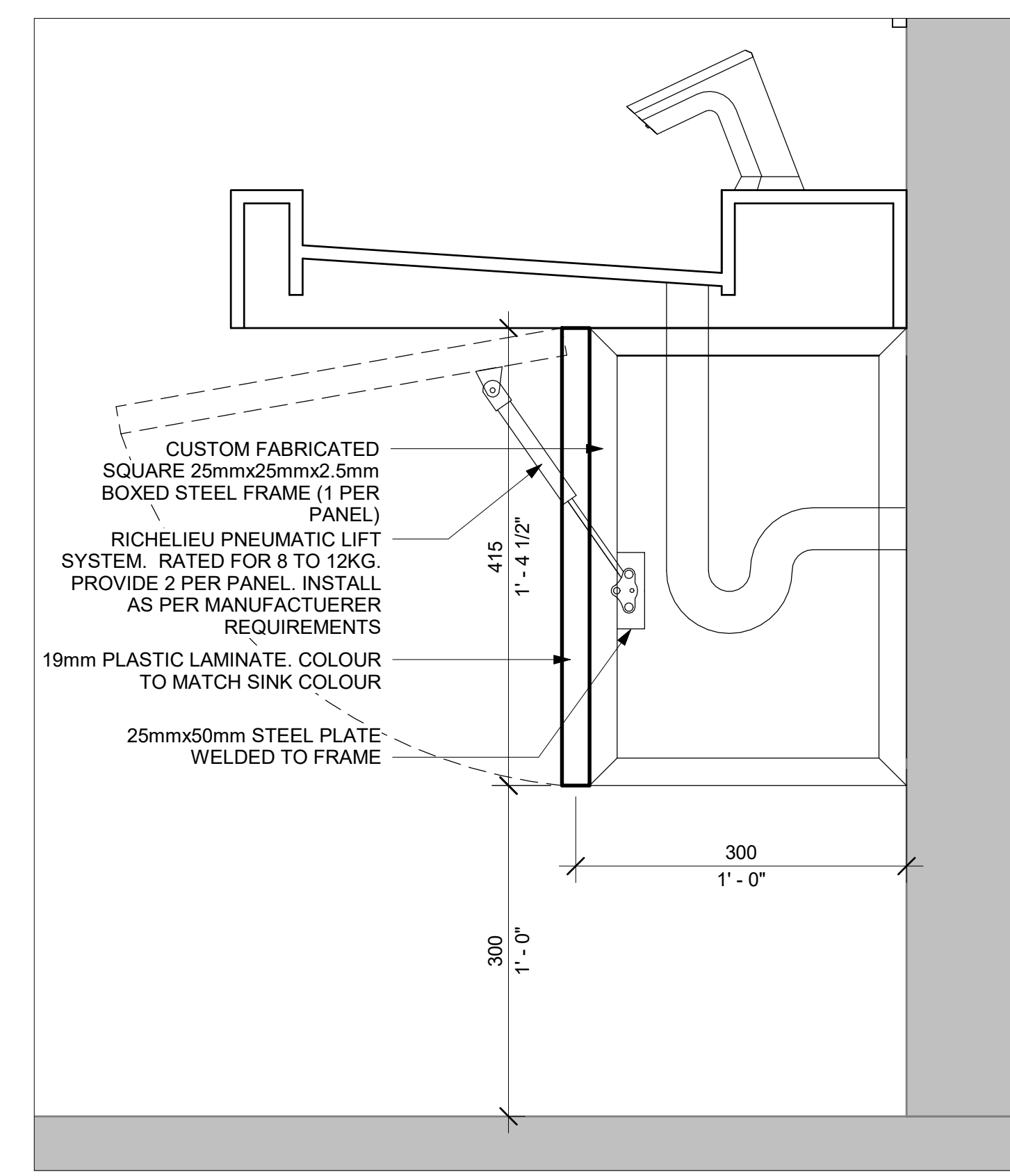


SUB-CONSULTANTS:



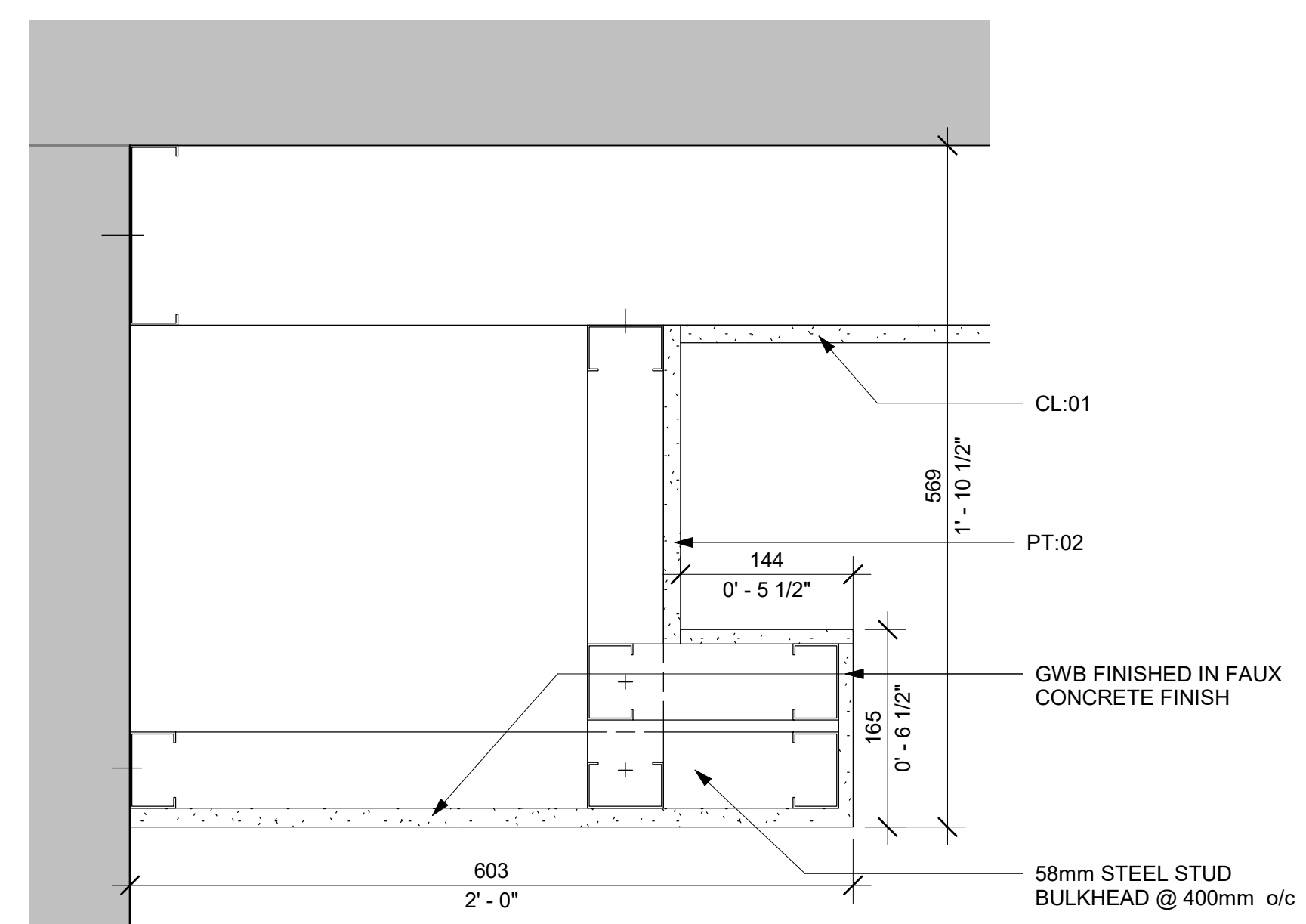
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2 TYP. SINK SKIRT DETAIL
1 : 5

NOTE:
 FAUX CONCRETE FINSH COMPRISED OF JOINT COMPOUND WITH CONCRETE COLOURING TROWELED ONTO GYPSUM WALL BOARD. THREE LIQUID CONCRETE COLOURS ARE TO BE USED. LIGHT, MEDIUM AND DARK. UTILIZE QUIKRETE LIQUID CEMENT COLOUR OR APPROVED EQUIVALENT



1 TYP. BULKHEAD DETAIL
1 : 5

TORONTO ZOO
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DETAILS

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A502

Scale	1 : 5
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GENERAL NOTES:

1. GENERAL SCOPE OF WORK
 - 1.1. FURNISH ALL LABOUR, MATERIALS, EQUIPMENT, TOOLS AND SUPPORTS AS WELL AS SUPERVISION TO PROVIDE A COMPLETE INSTALLATION, TESTED AND IN WORKING ORDER, AS SHOWN ON THE DRAWINGS.
 - 1.2. THE CONTRACTOR SHALL PERFORM THE WORK STIPULATED IN THE CONTRACT AND ANY OR ALL CONTRACT CHANGES AND CHANGE DIRECTIVES, AND SHALL FURNISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT, EVERYTHING NECESSARY FOR THE PROPER PERFORMANCE AND COMPLETION OF THE WORK.
 - 1.3. ALL WORK SHALL BE FULLY TESTED, COMMISSIONED AND IN GOOD WORKING ORDER AT TIME OF HAND-OVER TO OWNER.
 - 1.4. MAKE GOOD ANY DAMAGES TO EXISTING EQUIPMENT AND/OR SYSTEM(S), COORDINATE WORK AND WORKING HOURS WITH THE OWNER AND OTHER TRADES TO MINIMIZE DISRUPTION.
2. CODES AND STANDARDS
 - 2.1. ALL WORK SHALL CONFORM TO THE MOST RECENT ISSUES OF:
 - 2.1.1. THE ONTARIO BUILDING CODE
 - 2.1.2. THE ONTARIO ELECTRICAL SAFETY CODE
 - 2.1.3. THE MINISTRY OF THE ENVIRONMENT
 - 2.1.4. THE NATIONAL ELECTRICAL CODE
 - 2.1.5. BYLAWS AND REGULATIONS ISSUED BY THE BUILDING AUTHORITY HAVING JURISDICTION
 - 2.1.6. ASHRAE
 - 2.1.7. ASME
 - 2.1.8. SMACNA
 - 2.1.9. NFPA
 - 2.1.10. TSSA
 - 2.1.11. CSA
 - 2.1.12. CGA
3. COORDINATE AND PAY FOR ALL TSSA INSPECTIONS.
4. SPECIFICATIONS
 - 4.1. COMPLY WITH THE GENERAL SECTIONS AND APPLICABLE SECTIONS OF THE GENERAL CONTRACT SPECIFICATIONS.
5. WARRANTY
 - 5.1. WARRANT ALL LABOUR AND MATERIALS INCLUDED IN THIS CONTRACT FOR A PERIOD OF TWO YEARS FROM DATE OF FINAL ACCEPTANCE, ASSUME FULL RESPONSIBILITY FOR LAYOUT OF ALL WORK AND FOR ANY DAMAGE CAUSED TO OWNER OR OTHERS BY IMPROPER CARRYING OUT OF THE WORK.
6. DRAWINGS
 - 6.1. DRAWINGS SHOW GENERAL INTENT OF THE WORK AND PROPOSED ROUTING ONLY.
 - 6.2. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS BY FIELD MEASURE BEFORE PROCEEDING WITH THE WORK.
 - 6.3. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES AND INFORMING THE ENGINEER PRIOR TO STARTING ANY WORK.
7. IDENTIFICATION
 - 7.1. MANUFACTURER'S EQUIPMENT NAMEPLATES
 - 7.1.1. METAL OR PLASTIC LAMINATE NAMEPLATE MECHANICALLY FASTENED TO EACH PIECE OF EQUIPMENT BY MANUFACTURER.
 - 7.1.2. LETTERING AND NUMBERS RAISED OR RECESSED.
 - 7.1.3. INFORMATION TO INCLUDE, AS APPROPRIATE:
 - 7.1.4. EQUIPMENT: MANUFACTURER'S NAME, MODEL, SIZE, SERIAL NUMBER, CAPACITY.
 - 7.1.5. MOTOR: VOLTAGE, Hz, PHASE, POWER FACTOR, DUTY, FRAME SIZE.
 - 7.2. SYSTEM NAMEPLATES:
 - 7.2.1. PROVIDE LAMINATED PLASTIC PLATES WITH BLACK FACE AND WHITE CENTER OF MINIMUM SIZE 3 1/2" X 1 1/2" X 1/10" (90 X 40 X 2.5 MM) NOMINAL THICKNESS, ENGRAVED WITH 1/4" (6 MM) HIGH LETTERING. USE 1" (25 MM) LETTERING FOR MAJOR EQUIPMENT.
 - 7.2.2. FASTEN NAMEPLATES SECURELY IN CONSPICUOUS PLACE. WHERE NAMEPLATES CAN NOT BE MOUNTED ON COOL SURFACE, PROVIDE STANDOFFS.
 - 7.2.3. IDENTIFY EQUIPMENT TYPE AND NUMBER (E.G. PUMP NO. 2) AND SERVICE OR AREAS OR ZONE OF BUILDING SERVED E.G. "OUTER LOBBY AHU NO. 3".
 - 7.2.4. ALL PLATES SHALL BE POP RIVETED IN PLACE.
 - 7.2.5. SUBMIT LIST OF NAMEPLATES FOR REVIEW PRIOR TO ENGRAVING.
 - 7.3. PIPING
 - 7.3.1. IDENTIFY MEDIUM IN PIPING WITH MARKERS SHOWING NAME AND SERVICE INCLUDING TEMPERATURE, PRESSURE AND DIRECTIONAL FLOW ARROWS IN ACCORDANCE WITH CGSB 24 OF 34
 - 7.3.2. ALL FIRE PROTECTION STAND PIPING SHALL BE PAINTED RED
 - 7.3.3. ALL NATURAL GAS PIPING SHALL BE PAINTED YELLOW
 - 7.3.4. MANUFACTURED PIPE MARKERS AND COLOR BANDS:
 - 7.3.4.1. ALL IDENTIFICATION SHALL INCORPORATE DIRECTION OF FLOW ARROWS.
 - 7.3.4.2. MARKERS SHALL BE MANUFACTURED FROM SEMI RIGID PLASTIC VINYL, WITH SUBSURFACE PRINTING USING QUALITY INDOOR/OUTDOOR VINYL INKS AND A UV VINYL INHIBITOR.
 - 7.3.4.3. FOR OUTSIDE DIAMETERS UP TO 6" THE MARKERS SHALL BE COILED AND WRAP COMPLETELY AROUND THE PIPE WITH SIX ROWS OF WORDING IN ALTERNATE DIRECTIONS.
 - 7.3.4.4. FOR OUTSIDE DIAMETERS GREATER THAN 6" THE MARKERS SHALL BE SADDLE STYLE WITH TWO (2) ROWS OF WORDING AND SHALL BE INSTALLED UTILIZING NYLON CABLE TIES PROVIDED WITH THE MARKER.
 - 7.4. DUCTWORK
 - 7.4.1. USE 2" (50 MM) HIGH BLACK STENCILED LETTERS, E.G. "SUPPLY AHU-1", "RETURN AHU-1", "SANITARY EXHAUST EF-1" WITH DIRECTIONAL FLOW ARROW. LETTERING MUST IDENTIFY THE SYSTEM THAT THE DUCTWORK SERVES.
 - 7.4.2. MAINTAIN MAXIMUM 50 FT (15 M) DISTANCE BETWEEN MARKINGS.
 - 7.4.3. IDENTIFY DUCTS EACH SIDE OF DIVIDING WALLS OR PARTITIONS AND BESIDE EACH ACCESS DOOR..
8. SITE CONDITIONS
 - 8.1. EXAMINE SITE CONDITIONS TO ENSURE THAT WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN. IF SITE EXAMINATION REVEALS ANY DIFFICULTIES THAT WILL PREVENT THE WORK FROM BEING CARRIED OUT AS DESIGNED THESE MUST BE INDICATED IN THE TENDER PRICE, AND BROUGHT TO THE ATTENTION OF THE ENGINEER.
 - 8.2. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY ADDITIONAL DIFFICULTIES, INTERFERENCES AND SITE CONSTRAINTS THAT MAY BE IDENTIFIED DURING THE CONSTRUCTION OF THE PROJECT.
 - 8.3. ALL NOISY WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS: BETWEEN 6PM AND 7AM, MONDAY THROUGH FRIDAY; AND ON WEEKENDS, FRIDAY 6PM THROUGH MONDAY 7AM.
 - 8.4. COORDINATE SITE ACCESS AND DELIVERIES WITH LANDLORD AND/OR GENERAL CONTRACTOR.
9. CLEANING
 - 9.1. CLEAN PREMISES DAILY AT THE END OF EACH WORK DAY.
 - 9.2. DO NOT ACCUMULATE EQUIPMENT, TOOLS, DEBRIS AND WASTE MATERIALS ON SITE. REMOVE FROM SITE DAILY.
 - 9.3. COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.
 - 9.4. ALL MATERIALS TO BE DISPOSED OF CONSTRUCTION SITE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
19. SOUND CRITERIA
 - 19.1. CONTRACTOR TO ENSURE EQUIPMENT SELECTIONS, SERVICE DISTRIBUTION AND INSTALLATION METHODS SHALL BE UNDERTAKEN IN ORDER TO MAINTAIN A NOISE DESIGN LEVEL OF NC 35 IN ALL WASHROOM. DESIGN CRITERIA IS AS PER ASHRAE APPLICATIONS HANDBOOK.
20. EXISTING EQUIPMENT AND SYSTEMS
 - 20.1. DISCONNECT, RECONNECT OR RELOCATE EXISTING EQUIPMENT OR SERVICES WHERE SHOWN OR AS REQUIRED TO PERMIT NEW WORK TO BE INSTALLED WITHOUT INTERFERENCES. ENSURE THAT REQUIRED SERVICES ARE MAINTAINED.
 - 20.2. COORDINATE WITH THE OWNER BEFORE INTERRUPTING ANY ESSENTIAL SERVICES.
 - 20.3. ROUTING OF NEW SERVICES MAY BE ADJUSTED TO ACCOMMODATE EXISTING SERVICES AND CONDITIONS PROVIDED THAT THE INTENT OF THE DRAWINGS IS MET AND THE ORIGINAL STANDARDS ARE MAINTAINED.
 - 20.4. PROVIDE DRAWINGS OF PROPOSED REVISIONS TO ENGINEER FOR APPROVAL BEFORE BEGINNING ANY WORK. INCORPORATE ALL CHANGES IN AS BUILT DRAWINGS.
 - 20.5. COORDINATE ALL ROUTING CHANGES WITH OTHER TRADES THAT MAY BE AFFECTED.
 - 20.6. ENGINEER TO BE ADVISED PRIOR TO CHANGES WHERE CHANGES COULD BE SIGNIFICANT.
 - 20.7. THE CONTRACTOR IS TO TAKE EXTRA CARE DURING THIS INSTALLATION NOT TO DISTURB THE OPERATIONS OF THE COMPLEX. IT IS CRITICAL THAT THERE WILL BE NO UNSCHEDULED SHUTDOWNS OR INTERRUPTIONS OF ANY OPERATIONS.
 - 20.8. ALL ASSOCIATED COSTS OF SUCH WILL BE PASSED TO THE CONTRACTOR.
21. OPEN FLAMES AND WELDING
 - 21.1. NO OPEN FLAMES OR WELDING IS PERMITTED WITHIN THE BUILDING WITHOUT WRITTEN PERMISSION BY THE OWNER AND/OR THE ENGINEER.
 - 21.2. HOT WORK PERMIT MUST BE VISIBLE AT ALL TIMES.
 - 21.3. ADEQUATE NUMBER OF FIRE EXTINGUISHERS MUST BE PROVIDED DURING THE OPEN FLAME PROCESS.
22. FIRE EXTINGUISHERS
 - 22.1. PROVIDE IN ACCORDANCE WITH NFPA 10 AND AUTHORITY HAVING JURISDICTION.
 - 22.2. PROVIDE FIRE EXTINGUISHER AT EACH EXIT DOOR WAY OR AS INDICATED ON DRAWINGS.
 - 22.3. MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER SHALL BE 75FT.
 - 22.4. EXTINGUISHER SHALL BE 10LB (OR AS INDICATED), MULTI-PURPOSE DRY CHEMICAL, STORED PRESSURE RECHARGEABLE TYPE, ULC LABELED FOR A, B AND C CLASS PROTECTION WITH SHUT-OFF NOZZLE AND WALL MOUNTING KIT.
23. MATERIALS
 - 23.1. USE ONLY NEW CSA AND ULC CERTIFIED EQUIPMENT AND MATERIALS UNLESS OTHERWISE INDICATED.
 - 23.2. ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED WITH RESPECT TO STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF INSTALLATION WORK.
24. SHOP DRAWINGS
 - 24.1. SUBMIT 4 COPIES OF SHOP DRAWINGS, UNLESS OTHERWISE INDICATED, FOR ENGINEER'S REVIEW.
 - 24.2. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ENGINEER'S REVIEW COVERING ALL RELEVANT DETAILS, DIMENSIONS AND PERFORMANCE.
 - 24.3. SHOP DRAWINGS MUST BE REVIEWED, STAMPED AND SIGNED BY THE CONTRACTOR AND THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT / ENGINEER FOR REVIEW.
25. CUTTING, PATCHING AND PAINTING REQUIREMENTS
 - 25.1. PROVIDE CUTTING, PATCHING AND PAINTING FOR ALL OPENINGS. USE QUALIFIED TRADES FOR THIS WORK. RESTORE FINISHES TO MATCH EXISTING SURROUNDINGS.
 - 25.2. SUPPLY AND INSTALL APPROVED FIRESTOPS AS REQUIRED TO MAINTAIN FIRE RATING.
 - 25.3. PIPING AND VENTS THROUGH WALL AND ROOF SHALL BE BY THE MECHANICAL DIVISION CONTRACTOR, INCLUDING ALL PATCHING.
26. CORING REQUIREMENTS
 - 26.1. FOR ALL CORING LESS THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING AREA PRIOR TO CORING THROUGH FLOORS/CEILING.
 - 26.2. FOR ALL CORING GREATER THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR X-RAYING AREA PRIOR TO CORING THROUGH FLOORS/CEILING.
27. PENETRATIONS THROUGH FLOORS AND WALLS
 - 27.1. UNLESS OTHERWISE SPECIFIED ON DRAWINGS, GLASS FIBRE FIRE RETARDANT INSULATION AND FIRESTOP CAULKING SHALL BE PACKED AROUND PIPE OPENINGS IN FLOORS AND WALLS AT TIME OF PIPE INSTALLATION. FIRESTOP CAULKING SHALL BE "IM FIRE BARRIER" FIRETEMP CAULK OR EQUIVALENT.
 - 27.2. APPLY FIRESTOP SYSTEMS IN ACCORDANCE WITH 3M'S INSTRUCTIONS. ALL SYSTEMS SHALL MEET CSA F-SYSTEM RATINGS FOR THE PARTICULAR FIRE RATING OF THE PENETRATED SURFACE.
 - 27.3. FIRESTOPPING CONTRACTOR MUST BE A LICENSED 3M CERTIFIED INSTALLER (REFER TO LIST IN SPECIFICATION PACKAGE).
 - 27.4. MATERIALS SHALL BE ASBESTOS-FREE ELASTOMERIC MATERIALS, TESTED, LISTED AND LABELED BY ULC IN ACCORDANCE WITH CAN 4-5115-M85, AND CAN/ULC-S101-M FOR INSTALLATION IN ULC DESIGNATED FIRE STOPPING AND SMOKE SEAL SYSTEMS, TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL AND A FIRE RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN THE FIRE RATING FOR SURROUNDING CONSTRUCTION. MATERIALS SHALL BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES.
28. DIELECTRIC ISOLATION
 - 28.1. PROVIDE ISOLATION WHEN USING DISSIMILAR MATERIALS, TO PREVENT GALVANIC ACTION.

29. VIBRATION ISOLATION
 - 29.1. PROVIDE ALL MINIMUM 3/4" THICK MSN ELASTOMERIC PADS W/MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.
30. ELECTRICAL
 - 30.1. ALL LOW VOLTAGE CONTROL WIRING (<50V) SHALL BE BY THIS DIVISION, TO ELECTRICAL DIVISION STANDARDS.
31. PRESSURE TESTING
 - 31.1. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED TO 860 KPA OR 1.5 TIMES SYSTEM OPERATING PRESSURE FOR A DURATION OF 24 HRS UNLESS OTHERWISE INDICATE.
32. AS BUILT DRAWINGS
 - 32.1. MAINTAIN A RECORD OF ALL REVISIONS. PREPARE RECORD DRAWINGS IN A NEAT MANNER SHOWING ALL DEVIATIONS IN WORK. ON COMPLETION OF WORK, SUBMIT TO THE ENGINEER ONE HARD COPY OF AS BUILT DRAWINGS AND ELECTRONIC FORMAT DRAWINGS (IN AUTOCAD).
33. OPERATION AND MAINTENANCE MANUALS
 - 33.1. SUBMIT 5 COPIES OF O&M MANUALS TO ENGINEER FOR REVIEW. ALSO INCLUDE 1 COPY IN PDF FORMAT CONTRACTOR RED LINES AND O&M MANUAL. MANUALS SHALL INCLUDE SHOP DRAWINGS OF ALL NEW EQUIPMENT, TEST AND BALANCING REPORTS, COMMISSIONING REPORTS, WARRANTIES, AND OPERATION, MAINTENANCE PROCEDURES AND AS BUILT DRAWINGS.
34. TESTING, ADJUSTING AND BALANCING (T.A.B.)
 - 34.1. INCLUDE ALL TESTING, ADJUSTING AND BALANCING FOR AIR AND HYDRONIC SYSTEMS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 - 34.1.1. ALL NEW & EXISTING UNITS: FF, MUA, GRILLES, DPHVT, VALVES ETC.
 - 38.2. REPORT TO INCLUDE FLOWS, PRESSURES, VELOCITIES AND OTHER PERTINENT PERFORMANCE DATA FOR AIR AND HYDRONICS. REPORT SHALL ALSO INCLUDE POWER, AMPS, VOLTAGES, PERFORMANCE CURVES, SETTINGS OF ALL SETPOINTS AND SAFETIES, AND ALL OTHER INFORMATION THAT MAY BE REQUESTED BY THE OWM START-UP FORMS, THE ENGINEER OR THE COMMISSIONING AGENT.
 - 38.3. INCLUDE REPORT IN THE OPERATION AND MAINTENANCE MANUALS.
 - 38.4. NOTIFY ENGINEER OF ANY DISCREPANCIES GREATER THAN 45% OF DESIGN VALUES PRIOR OF SUBMISSION OF REPORT.
 - 38.5. BALANCING SHALL BE PERFORMED BY AN AABC OR NEBB CERTIFIED BALANCER.
39. REMOVE ALL ABANDONED PIPES, HANGERS, INSERTS, CONDUNTS, DUCTS AND SERVICES. FIRESTOP AND SEAL ALL AFFECTED AREAS.
40. SEAL AND FIRESTOP ALL WALL, FLOOR AND ROOF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.
41. ALL NEW EQUIPMENT CONTROL PANELS MUST BE OPEN PROTOCOL INTERFACE TO ACCOMMODATE BACNET OR LONTAK.
42. DUCT FLEXIBLE CONNECTIONS MUST BE INSTALLED AT INLETS AND OUTLETS OF SUPPLY AND EXHAUST AIR UNITS.
43. CO-ORDINATE ALL DIMENSIONS WITH EQUIPMENT SHOP DRAWINGS.
44. THOROUGHLY INSPECT EXISTING STRUCTURE AND CHECK SITE CONDITIONS WITH CONDITION SHOWN ON CONTRACT DRAWINGS BEFORE PROCEEDING WITH WORK. MAKE ADJUSTMENTS TO WORK TO SUIT EXISTING CONDITION AND IN CONFORMANCE WITH DESIGN INTENT. REPORT ANY DISCREPANCIES TO THE ENGINEER.
45. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF DIVISION 1 OR DIVISION 2.1 OR W47.1.

PIPING, PLUMBING, FIXTURES AND ACCESSORIES:

1. GENERAL
 - 1.1. MATERIAL AS INDICATED ON DRAWINGS. IF MATERIALS HAVE NOT BEEN INDICATED ON DRAWINGS, THEN INSTALLATION SHALL ADHERE TO THIS SECTION.
 - 1.2. CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING EXACT LOCATIONS OF EXISTING PIPING. APPROXIMATE DISTANCES ARE INDICATED ON DRAWINGS AS REQUIRED.
 - 1.3. PROVIDE MATERIALS IN ACCORDANCE WITH THIS SECTION UNLESS OTHERWISE SPECIFIED.
 - 1.4. PROVIDE ALL MATERIALS REQUIRED INCLUDING PIPING, VALVES, FITTINGS, TRAPS, HANGERS, SUPPORTS AND THERMAL INSULATION FOR COMPLETE SYSTEM INSTALLATION AND OPERATION.
 - 1.5. PROVIDE MINIMUM PIPE INSULATION THICKNESSES IN ACCORDANCE WITH LATEST EDITION OF ASHRAE STANDARD 90.1 UNLESS OTHERWISE INDICATED.
 - 1.6. PROVIDE ALL PLUMBING SYSTEMS, FIXTURES AND ACCESSORIES IN ACCORDANCE WITH OBC AND LOCAL AUTHORITIES HAVING JURISDICTION.
2. THERMAL INSULATION
 - 2.1. REPAIR AND/OR REPLACE MISSING OR DAMAGED INSULATION ON BASE BUILDING PIPING SYSTEMS TO BASE BUILDING STANDARDS.
 - 2.2. DIRECT EXPOSED INSULATION PIPING SHALL BE INSULATED WITH 3/8" FLEXIBLE ELASTOMERIC THERMAL INSULATION. C/W FLEXIBLE ELASTOMERIC THERMAL INSULATION MESH COATING (FOR UV PROTECTION) FOR LOCATIONS WITH UV EXPOSURE.
 - 2.3. FOR ALL OTHER PROCESSES AND PLUMBING TYPES: UNLESS OTHERWISE INDICATED, PROVIDE AND INSTALL FIBERGLASS INSULATION WITH REINFORCED VAPOUR RETARDER FACING AND FACTORY APPLIED ADHESIVE CLOSURE SYSTEM. INSULATION SHALL BE JOHNS MANVILLE MICRO-LOK AP-T PLUS OR EQUIVALENT.
 - 2.4. MINIMUM PIPE THICKNESSES SHALL BE IN ACCORDANCE WITH LATEST EDITION OF ASHRAE STD. 90.1.
 - 2.5. MINIMUM PIPE INSULATION SHALL BE 1" FOR ALL CHILLED WATER PIPES, HOT WATER HEATING PIPES, CONDENSATE LINE, DOMESTIC HOT AND COLD WATER PIPES, AND RAIN WATER LEADERS UNLESS OTHERWISE INDICATED.
 - 2.6. DOMESTIC HOT WATER PIPES GREATER THAN 2" SHALL HAVE 1-1/2" THICK INSULATION.
 - 2.7. HEAT PUMP LOOP PIPING NEED NOT TO BE INSULATED.
 - 2.8. INSULATION FOR STEAM LINES AND CONDENSATE SHALL BE RIGID MOULDED MINERAL FIBRE WITHOUT FACTORY APPLIED VAPOUR RETARDER.
 - 2.9. THICKNESS FOR STEAM PIPES (UP TO 175°C) SHALL BE AS FOLLOWS:
 - 2.9.1. RUN OUTS (<13FT LONG): 1-1/2";
 - 2.9.2. PIPE UP TO: 1" : 2";
1-1/4" TO 2" : 2-1/2";
2-1/2" TO 4" : 3";
5" AND OVER : 3-1/2".
- 2.10. THICKNESS FOR CONDENSATE SHALL BE AS FOLLOWS:
 - 2.10.1. RUN OUTS (<13FT LONG): 1";
 - 2.10.2. ALL OTHER PIPE SIZES: 1-1/2"
- 2.11. PROVIDE AND INSTALL PVC JACKET (AND VAPOUR RETARDER)(IF NOT PROVIDED ELSEWHERE) FOR INDOOR INSULATED PIPE APPLICATIONS. JACKETING SHALL BE JOHNS MANVILLE ZESTON 300 SERIES OR EQUIVALENT.(NOT NECESSARY FOR USE WITH MICRO-LOK AP-T PLUS)
- 2.12. PROVIDE AND INSTALL ALUMINUM JACKET WITH A LAMINATED MOISTURE RETARDER FOR OUTDOOR INSULATED PIPE APPLICATIONS. SECURE JACKET USING METAL BANDS AT BUTT JOINT OVERLAPS AND BETWEEN JOINTS.
- 2.13. INSTALL ALL INSULATION AND JACKETS AS PER MANUFACTURER RECOMMENDATIONS.
- 2.14. PROVIDE CANVAS JACKET WITH LAGGING ADHESIVE ON ALL STEAM AND CONDENSATE PIPE APPLICATIONS.
- 2.15. MAINTAIN UNINTERRUPTED CONTINUITY AND INTEGRITY OF VAPOUR RETARDER AND FINISHES. HANGERS AND SUPPORTS TO BE OUTSIDE VAPOUR OF RETARDER.
- 2.16. APPLY HIGH COMPRESSIVE STRENGTH INSULATION, SUITABLE FOR SERVICE, AT OVERSIZED SADDLES AND SHOES WHERE INSULATION SADDLES HAVE NOT BEEN PROVIDED.
- 2.17. INSULATION SHALL BE FOIL FACED.
- 2.18. INSULATION SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.

3. PIPE HANGERS AND SUPPORTS
 - 3.1. PROVIDE HANGERS AND SUPPORTS SHALL BE SPACED IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.
 - 3.2. PIPE HANGERS SHALL BE GRINNELL ADJUSTABLE CLEVIS TYPE OR EQUIVALENT.
 - 3.3. EXTERIOR SUPPORTS SHALL BE S.S. GRINNELL OR EQUIVALENT

4. PIPING SYSTEM
 - 4.1. SCHEDULE 40, A 53 GRADE B.
 - 4.2. ONLY LONG RADIUS TO BE USED.
 - 4.3. PROVIDE ISOLATION VALVES, DRAIN VALVES, STAINLESS STEEL BRAIDED FLEXIBLE HOSES AT THE SUPPLY AND RETURN LINES AS INDICATED ON DRAWINGS.
 - 4.4. PROVIDE AND INSTALL OTHER COMPONENTS RECOMMENDED BY SUPPLIER / SUPPLIED LOOSE TO MANUFACTURER RECOMMENDATIONS.
 - 4.5. ALL VALVES AND COUPLINGS 2"Ø OR LESS SHALL BE RATED FOR 600 CWP.
 - 4.6. ALL PIPING, VALVES AND CONNECTION LESS THAN 2-1/2"Ø SHALL HAVE SCREWED FITTINGS.
 - 4.7. ALL PIPING 2-1/2"Ø OR GREATER SHALL BE WELDED AND FLANGED.

5. PRESSURE TESTING
 - 5.1. ALL PIPING SYSTEMS SHALL BE HYDROSTATICALLY PRESSURE TESTED TO A MINIMUM OF 860 KPA OR 1-1/2 TIMES SYSTEM OPERATING PRESSURE (WHICHEVER IS GREATER) FOR A PERIOD OF 24 HOURS UNLESS OTHERWISE INDICATED.

6. DRAINAGE WASTE AND VENT PIPING
 - 6.1. ABOVE GROUND SANITARY, STORM AND VENT LINES LESS THAN 3" SHALL BE TYPE DWV TO ASTM B306 WITH CAST BRASS OR WROUGHT COPPER FITTINGS TO CAN/CSA B125.
 - 6.2. JOINTS FOR COPPER TUBE/PIPE SHALL BE TIN/ANTIMONY (95%/5%) SOLDER.
 - 6.3. PROVIDE TRAP PRIMERS WHERE REQUIRED.
 - 6.4. ABOVE GROUND SANITARY, STORM AND VENT LINES 3" AND LARGER SHALL BE CAST IRON HUB AND SPIGOT PIPE IN ACCORDANCE WITH THE LATEST EDITION OF THE OBC FOR SOIL AND WASTE. JOINTS SHALL BE CAULKED WITH WHITE OAKUM AND SECURED WITH MOLTEN LEAD NOT LESS THEN 1" DEEP.
 - 6.5. BURIED SANITARY, STORM AND VENT SHALL BE MINIMUM 3" CAST IRON TO CAN/CSA-B70, JOINTS FOR CAST IRON SHALL BE HUB AND SPIGOT.
 - 6.6. BURIED SANITARY, STORM AND VENT SHALL BE MINIMUM 3" PVC OR ABS PIPE AND FITTINGS TO CSA CAN-3-B181.1-M85 (ABS), CAN-3-B181.2-M85 (PVC), B182.1-M1983, B182.2-M1983, (LARGE DIAMETER PSM PVC), B182.3-M1983 (LARGE DIAMETER IPS PVC).
 - 6.7. PROVIDE AND INSTALL BACK WATER VALVE ON ALL FLOOR DRAIN.

7. DOMESTIC COLD AND HOT WATER PIPE
 - 7.1. TYPE L COPPER TO ASTM B88M.
 - 7.2. JOINTS SHALL BE TIN/SILVER OR TIN/ANTIMONY (95%/5%) SOLDER AND NON-CORROSIIVE FLUX. ALL SOLDER SHALL BE LEAD FREE.
 - 7.3. PROVIDE ISOLATION VALVES FOR EACH NEW FIXTURE. VALVES SHALL BE BY-PASS BALL VALVES WITH THREADED/SOLDERED ENDS, RATED FOR 400 CWP.
 - 7.4. TYPE K COPPER PIPE TO ASTM B88M SHALL BE USED FOR BURIED CWP PIPE.
 - 7.5. CONTRACTOR SHALL ENSURE THAT BACKFLOW PREVENTER IS INSTALLED AND PIPING ARE CLEARLY MARKED AS NON-POTABLE WATER.
8. VALVES (CW)
 - 8.1. NEW VALVES 2"Ø OR LESS SHALL BE BRASS BALL VALVES WITH THREADED ENDS, FULL PORT, 600 CWP, ULC LISTED AND FM APPROVED.
 - 8.2. ALL VALVES 2-1/2"Ø OR GREATER SHALL HAVE FLANGE CONNECTIONS.
 - 8.3. ACCEPTABLE MANUFACTURER: JENKINS OR APPROVED EQUAL.

9. BURIED SANITARY, STORM AND VENT
 - 9.1. SHALL BE MINIMUM 3" CAST IRON TO CAN/CSA-B70.
 - 9.2. JOINTS FOR CAST IRON SHALL BE HUB AND SPIGOT
 - 9.3. PROVIDE TRAP PRIMERS WHERE REQUIRED.
 - 9.4. PROVIDE BACKWATER VALVE ON ALL FLOOR DRAINS AND WHERE INDICATED ON DRAWINGS.
10. FLOOR DRAINS
 - 10.1. ABS, PVC OR CAST IRON SIZE AS INDICATED ON DRAWING.

- 10.2. DRAIN SHALL BE ZURN OR EQUAL.
 - 10.3. PROVIDE PRIMING AT EACH FLOOR DRAIN FROM NEAREST LAVATORY OR WATER CLOSET.
11. CLEAN-OUTS AND VENTING
 - 11.1. PROVIDE IN ACCORDANCE WITH OBC CHAPTER 7 AND AS INDICATED ON DRAWINGS.
 12. BACKFLOW PREVENTER (BFP)
 - 12.1. BACKFLOW PREVENTORS SHALL BE COMPLY WITH CSA B64.
 - 12.2. REDUCED-PRESSURE PRINCIPLE.
 - 12.3. SIZE AS INDICATED ON DRAWING.
 - 12.4. PROVIDE CUP DRAIN BELOW BFP AND INDIRECTLY ROUTE TO NEAREST (HUB) DRAIN.
 13. FIXTURES:
 - 13.1. PROVIDE ALL NEW FIXTURES (AS INDICATED).
 - 13.2. NEW FIXTURES SHALL BE BARRIER FREE AND CSA APPROVED.
 - 13.3. FIXTURES SHALL MEET WATER EFFICIENCY REQUIREMENTS AS INDICATED IN OBC CHAPTER 7.
 - 13.4. PROVIDE WATER HAMMER ARRESTOR/AIR CHAMBER PER WASHROOM GROUP AND AS SHOWN.

HVAC:

1. DUCTWORK
 - 1.1. DUCTWORK SHALL BE CONSTRUCTED TO ASHRAE/SMACNA STANDARDS.
 - 1.2. DUCT SIZES ARE LISTED ON DRAWINGS. ALL DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS.
 - 1.3. ALL FLEXIBLE DUCTWORK TO DIFFUSERS SHALL BE ALUMINUM SPIRAL, MAXIMUM LENGTH 10FT.
 - 1.4. SEAL ALL NEW LOW PRESSURE DUCTS (<2IN.WC.) AND LOW PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'C' USING SEALANT OR ALUMINUM TAPE; OR A COMBINATION THEREOF.
 - 1.5. HIGH PRESSURE DUCTS (>=2IN.WC.) SHALL BE CONSTRUCTED OF FACTORY FABRICATED, SPIRAL WOUND, GALVANIZED STEEL WITH MATCHING FITTINGS AND SPECIALS TO SMACNA. USE SPLIT TYPE JOINTS WITH SEALANT FOR DUCTS UP TO 36IN.
 - 1.6. SEAL ALL NEW HIGH PRESSURE DUCTS (>=2IN.WC.) AND HIGH PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'A' USING SEALANT.
2. FLEXIBLE DUCTS (LOW PRESSURE)
 - 2.1. NON-COLLAPSIBLE, COATED MINERAL BASE PERFORATED FABRIC TYPE HELICALLY SUPPORTED BY AND MECHANICALLY BONDED TO STEEL WIRE WITH FACTORY APPLIED FLEXIBLE GLASS FIBRE ACOUSTIC INSULATION AND ENCASED IN ALUMINUM FOIL AND MYLAR LAMINATE VAPOUR BARRIER.
 - 2.2. MAXIMUM LENGTH SHALL BE 10FT.
 - 2.3. DO NOT USE FOR HIGH PRESSURE SYSTEMS.
3. ELBOWS
 - 3.1. FOR LOW PRESSURE SYSTEM: ELBOWS SHALL HAVE RADIUS OF NOT LESS THAN DUCT WIDTH. BARBER-COLEMAN "AIRTURNS", HART & COOLEY "DUCTURNS" TURNING VANES OR DUCTMAE TURNING VANES SHALL BE PROVIDED IN ELBOWS OF LESSER RADIUS IN ALL DUCTWORK.
 - 3.2. FOR HIGH PRESSURE SYSTEM: SMOOTH RADIUS AND/OR 5-PIECE (FOR 90°), 3-PIECE (FOR 45°) WITH CENTRELINE RADIUS AT 1.5 X DIAMETER. USE 45° CONICAL TRANSITIONS FOR BRANCH CONNECTIONS.
4. BALANCING
 - 4.1. SHEET METAL CONTRACTOR SHALL EMPLOY THE SERVICES OF A LICENSED INDEPENDENT BALANCING COMPANY TO BALANCE THE AIR SYSTEMS TO ACHIEVE THE AIRFLOW SHOWN. THE BALANCING COMPANY SHALL SUBMIT A COMPLETE REPORT. ACCEPTANCE OF BALANCING AND REPORT WILL BE SUBJECT TO ON SITE MEASUREMENT AND/OR VERIFICATION OF THE REPORT BY THE MECHANICAL ENGINEER.
5. VIBRATION ISOLATION
 - 5.1. USE AND INSTALL MINIMUM 19MM THICK NSN ELASTOMERIC PADS W/ MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.
 - 5.2. PROVIDE AND INSTALL NEOPRENE HANGERS FOR CEILING SUSPENDED EQUIPMENT, DUCTWORK AND ACCESSORIES.
6. BALANCING DAMPERS
 - 6.1. BALANCING DAMPERS SHALL BE MANUALLY OPERATED OPPOSED BLADE OR SPLITTER TYPE. SPLITTER DAMPERS SHALL BE COMPLETE WITH CONTROL ROD, PIVOT BRACKET AND BALL JOINT FITTING WITH LOCKING SETSCREW.
 - 6.2. SPLITTER DAMPERS SHALL BE INSTALLED ON ALL BRANCH DUCT CONNECTIONS (OR TAKE-OFFS) FROM DUCTS.
 - 6.3. OPPOSED BLADE DAMPERS SHALL BE USED FOR ALL DIFFUSER/GRILLE BALANCING DAMPERS (WHERE INDICATED).
7. FIRE RATED DAMPERS (FRD)
 - 7.1. FRD SHALL BE CURTAIN TYPE WITH 135°F FUSIBLE LINK SUITABLE FOR HORIZONTAL OR VERTICAL INSTALLATION, 1 1/2 HR ULC RATED (AS PER ENCLOSURE FIRE RESISTANCE RATING).
 - 7.2. FRD SHALL BE RUSKIN MODEL DIBD2 STYLE B (OR EQUAL FOR DUCT HEIGHTS NOT EXCEEDING 305MM, AND DIBD2 STYLE A (OR EQUAL) FOR DUCT HEIGHTS EXCEEDING 305MM.
 - 7.3. PROVIDE ACCESS DOORS AT EACH FRD UNLESS FRONTAL ACCESS TO FRD IS AVAILABLE.
 - 7.4. COMBINATION FIRE AND SMOKE DAMPER (FSD) SHALL BE 1 1/2 HR ULC RATED WITH 24V ELECTRONIC ACTUATOR C/W 24V TRANSFORMER. ELECTRONIC ACTUATOR SHALL BE FACTORY INSTALLED BY DAMPER MANUFACTURER. FSD SHALL BE RUSKIN MODEL FSD60-II OR EQUIVALENT.
8. DIFFUSER/GRILLES/REGISTERS
 - 7.1. TYPE A - EXISTING GRILLE/LOUVER TO BE DEMOLISHED.
 - 7.2. TYPE B - PARALLEL BLADE, SINGLE DEFLECTION ALUMINUM SUPPLY GRILLE C/W BALANCING DAMPER, SURFACE MOUNT. SIZE AS INDICATED ON DRAWING.
 - 7.3. TYPE C - EGG CRATE GRILLE C/W BALANCING DAMPER, ALUMINUM, SURFACE MOUNT. SIZE AS INDICATED ON DRAWING SIMILAR TO EH PRICE 80 OR EQUIVALENT.

- 8.1. THERMAL INSULATION FOR DUCTS
 - 8.1.1. BLANKET OR RIGID THERMAL INSULATION ON INDOOR DUCTS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS UNLESS OTHERWISE INDICATED:
 - 8.1.1.1. INSULATE FULL LENGTH OF FRESH AIR SUPPLY DUCTS.
 - 8.1.1.2. INSULATE FULL LENGTH OF EXHAUST DUCTS FROM EXTERIOR WALL OR ROOF.
 - 8.1.1.3. INSULATE FULL LENGTH OF SUPPLY AND RETURN DUCTS THAT ARE ROUTED THROUGH A NON-CONDITIONED SPACE.
 - 8.1.1.4. THERMAL INSULATION IS NOT REQUIRED ON SUPPLY AND RETURN DUCTS CONFINED WITHIN A CONDITIONED SPACE (INCLUDING RETURN PLENUM CEILING).
 - 8.1.5. ACOUSTICALLY LINED INTERIOR DUCTS NEED NOT TO BE THERMALLY INSULATED.
 - 8.1.6. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
 - 8.2. INSULATION SHALL BE FOIL FACED HAVING FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
 - 8.3. THERMAL INSULATION SHALL BE 1-1/2" THICK BLANKET MINERAL FIBER OR 1" THICK RIGID MINERAL FIBERBOARD FOR WARM AIR DUCTS AND DUCTS BETWEEN OUTSIDE WALLS AND MIXING PLENUMS.
 - 8.4. THERMAL INSULATION FOR COLD AIR DUCTS SHALL BE 1-1/2" THICK RIGID INSULATION, OR 2" THICK BLANKET MINERAL FIBER.
 - 8.5. VAPOUR-RETARDER MEMBRANE SHALL BE INSTALLED WITH INSULATION ON COLD, DUAL-TEMP AND FRESH AIR SUPPLY DUCTS.
 - 8.6. ACCEPTABLE BLANKET MINERAL FIBER SHALL BE JOHNS MANVILLE MICROLOTTE DUCT WRAP TYPE 100 OR EQUIVALENT.
 - 8.7. ACCEPTABLE RIGID MINERAL FIBERBOARD SHALL BE JOHNS MANVILLE 800 SERIES SPIN-GLASS TYPE OR EQUIVALENT.
 - 8.8. SEAL ALL JOINTS WITH ULC LISTED SELF-ADHESIVE INSULATION TAPE FOR INDOOR DUCTS AND INSULATION.
 - 8.9. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
 - 8.10. EXTERIOR DUCTWORK INSULATION SHALL BE COVERED BY A .04" THICK ALUMINUM JACKET (FORMING THE DOUBLE SKIN) ALL LONGITUDINAL SEAMS SHALL BE FORMED ALONG THE BOTTOM. ENSURE THAT ALUMINUM JACKET IS FASTENED WITH SECURE, WATER-TIGHT MECHANICAL CONNECTIONS. APPLY EXTERIOR GRADE SEALANT AT ALL SEAMS.

9. ACOUSTIC INSULATION
 - 9.1. ACOUSTIC INSULATION SHALL BE PROVIDED WHERE INDICATED ON DRAWINGS AND IN ALL RETURN AIR TRANSFER DUCTS.
 - 9.2. ACOUSTIC INSULATION SHALL BE 1/2" THICK INTERNAL LINING, C/W FACTORY APPLIED BLACK ACRYLIC POLYMER COATING, HAVING FLAME SPREAD RATING OF 25 OR LESS AND SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
 - 9.3. DUCT SIZES SHOWN ON DRAWINGS INDICATE CLEAR INSIDE DIMENSIONS.
 - 9.4. ACCEPTABLE ACOUSTIC DUCT LINER SHALL BE JOHNS MANVILLE PERMACOTE LINAACOUSTIC STANDARD/HP OR EQUIVALENT.
 - 9.5. APPLY BLACK ACRYLIC POLYMER COATING TO ALL FIELD CUT EDGES AS PER SMACNA STANDARDS.
 - 9.6. ACCEPTABLE COATING SHALL BE JOHNS MANVILLE SUPERSAL OR EQUIVALENT.
10. FLEXIBLE CONNECTIONS
 - 10.1. FLEXIBLE CONNECTIONS TO BE FIRE RESISTANT NEOPRENE COATED GLASS FABRIC. PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCTED HVAC UNITS, FANS AND WHERE INDICATED ON DRAWINGS.
11. GAS FIRED EQUIPMENT COMBUSTION AND VENTING (FURNACE AND UNIT HEATER)
 - 11.1. GAS FIRED EQUIPMENT INSTALLATION AS PER MANUFACTURER RECOMMENDATION AND LOCAL APPLICABLE CODE.
 - 11.2. INSTALLATION AND VENTING PROVISIONS MUST BE IN ACCORDANCE WITH CAN/CSA STANDARD B149-1, ANSI Z223.1-NFPA 54, AND LOCAL AUTHORITIES HAVING JURISDICTION. SINGLE WALL TYPE B VENT PIPE MUST BE USED FOR HORIZONTAL VENTING, DOUBLE WALL TYPE B VENT TO BE USED FOR VERTICAL VENTING.
 - 11.3. VENTING SUPPORT DISTANCES SHALL BE AS PER MANUFACTURER RECOMMENDATIONS.
 - 11.4. ROOF/WALL PENETRATION PIECES SHALL BE ULC LISTED AND PROVIDED BY THE VENT MANUFACTURER.
 - 11.5. WHERE EXPOSED TO WEATHER, THE CASING JOINTS SHALL BE SEALED TO PREVENT RAINWATER FROM ENTERING THE SPACE BETWEEN INNER AND OUTER WALLS.
 - 11.6. VENT SHALL TERMINATE IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS AND LOCAL CODES.
 - 11.7. MAXIMUM HORIZONTAL VENT LENGTHS AS PER MANUFACTURER RECOMMENDATION AND REQUIREMENTS.
 - 11.8. ALL ACCESSORIES (EXIT CONE, CONNECTORS AND DRAIN FITTINGS) WITH DIRECT OR INDIRECT CONTACT WITH CONDENSATE SHALL BE PROVIDED IN AL29-C.
 - 11.9. PROVIDE ENGINEERED SHOP DRAWINGS OF SYSTEM FOR APPROVAL.
 - 11.10. ACCEPTABLE MANUFACTURER: DURAVENT, HEATFAB OR APPROVED EQUAL.
12. EXHAUST FANS
 - 12.1. ALL EXHAUST FANS SHALL BE RATED FOR PERFORMANCE AND SOUND IN ACCORDANCE WITH OBC PART 9

EXISTING & DEMOLITION KEY NOTES:

- PLUMBING:**
- DEMOLISH LAVATORY C/W FAUCETS, ISOLATION VALVES & ALL ACCESSORIES; DEMOLISH SANITARY PIPE IN WALL DN TO MAIN & CAP; MODIFY SERVICE (DCW+DHW+VENT) TO RECEIVE NEW FIXTURE.
 - DEMOLISH EXISTING & PROVIDE NEW FLOOR DRAIN & CLEAN OUT IN SAME LOCATION.
 - DEMOLISH FLOOR MOUNTED URINAL/WATER CLOSET C/W ISOLATION VALVES & ALL ACCESSORIES; MODIFY SERVICES (DCW+VENT) TO RECEIVE NEW FIXTURE.
 - ALTERNATE PRICE- DEMOLISH FLOOR MOUNTED WATER CLOSET C/W ISOLATION VALVES & ALL ACCESSORIES; CAP 1000 (APPR.) SANITARY BELOW SLAB; COORDINATE SLAB/FLOOR REPAIR WITH ARCH. DRAWINGS.
 - APPROXIMATE SIZE/LOCATION OF EXISTING SANITARY LINE. CONTRACTOR SHALL CAMERA INSPECT FOR SIZE & CONDITION, REPORT FINDING TO ENGINEER.
 - DEMOLISH 1000 (APPR.) BURIED SANITARY PIPE BACK TO MAIN & CAP; COORDINATE SLAB/FLOOR REPAIR WITH ARCH. DRAWINGS.
 - EXISTING 250 DHW & 630 DCW LINE DN TO BASEMENT.
 - EXISTING DCW INCOMING MAIN, CONTRACTOR SHALL CONFIRM BACKFLOW DEVICE CODE COMPLIANCE.
 - DEMOLISH MIXING VALVE C/W PANEL & ACCESSORIES, MODIFY CONNECTION TO RECEIVE NEW.
 - EXISTING DCW & DHW LINES TO REMAIN.
 - EXISTING NATURAL GAS DOMESTIC HOT WATER TANK (246L/65 GAL) IN BASEMENT.

EXISTING & DEMOLITION KEY NOTES:

- HVAC:**
- DEMOLISH SUPPLY/RETURN GRILLE AT H/L.
 - EXISTING DOOR MOUNTED TRANSFER GRILLE TO REMAIN.
 - DEMOLISH CEILING HUNG MAKE-UP AIR UNIT C/W CONTROLS, COMBUSTION AIR INTAKE & FLUE VENT.
 - DEMOLISH THERMOSTAT AT H/L C/W WIRING.
 - DEMOLISH INSULATED EXHAUST DUCT UP THROUGH ROOF.
 - DEMOLISH EXHAUST FAN AT CEILING LEVEL.
 - DEMOLISH FRESH AIR INTAKE DUCT C/W DAMPER & FRESH AIR LOUVER.
 - EXISTING NATURAL GAS PIPE TO REMAIN.

MODIFICATION KEY NOTES:

- PLUMBING:**
- PROVIDE TROUGH SINK AS PER SCHEDULE; PROVIDE 500 SAN. DN TO 1000 (APPR.) EXISTING SANITARY MAIN; RECONNECT SERVICE (DCW+DHW+VENT).
 - PROVIDE WALL MOUNTED URINAL (UR-1) AS PER SCHEDULE ; PROVIDE 1000 SAN. DN TO NEW 1000 SANITARY MAIN; RECONNECT SERVICES (DCW+VENT).
 - PROVIDE FLOOR MOUNTED WATER CLOSET (WC-1, WC-3) AS PER SCHEDULE IN SIMILAR LOCATION; RECONNECT SERVICES (DCW+SANITARY+VENT).
 - ALTERNATE PRICE- PROVIDE WALL MOUNTED WATER CLOSET (WC-2, WC-4) AS PER SCHEDULE; PROVIDE 1000 SAN. DRAIN DN TO 1000 (APPR.) NEW SANITARY MAIN; RECONNECT SERVICES (DCW+VENT).
 - PROVIDE THERMOSTATIC MIXING VALVE (MV-1) IN SAME LOCATION AS PER SCHEDULE; RECONNECT SERVICES (DCW+DHW+TEMPERED WATER).
 - PROVIDE DCW/DHW INSULATION FROM BUILDING CONNECTION TO ALL SERVICES IN WASHROOM; REMOVE & REPLACE ANY EXISTING DAMAGED INSULATION.
 - PROVIDE 200 DOMESTIC HOT WATER RE-CIRCULATION LINE; CONNECT TO EXISTING DOMESTIC HOT WATER LINE.

MODIFICATION KEY NOTES:

- HVAC:**
- PROVIDE THERMOSTAT & HUMIDSTAT C/W WIRING AT ACCESSIBLE HEIGHT.
 - PROVIDE INSULATED EXHAUST DUCT UP THROUGH ROOF AND TERMINATE WITH GOOSE NECK AT MIN. 3048mm LOFT, AWAY FROM ANY FRESH AIR INTAKE INCLUDING OPERABLE WINDOWS.
 - PROVIDE SQUARE IN-LINE CENTRIFUGAL EXHAUST FAN AT CEILING LEVEL. MODIFY EXISTING EXHAUST DUCTWORK TO ALLOW FOR UNIT INSTALLATION. CONTRACTOR SHALL SITE VERIFY SPACE AVAILABILITY AND UNIT ORIENTATION PRIOR TO PURCHASE.
 - MAKE-UP AIR UNIT, EXHAUST FAN & SCENT AIR SYSTEM OPERATION SHALL BE TIMER BASED AUTOMATIC START/STOP.
 - PROVIDE CEILING HUNG MAKE-UP AIR UNIT PER SCHEDULE C/W INSULATED FRESH AIR INTAKE DUCTWORK & VENTING UP THROUGH ROOF. CONTRACTOR SHALL SITE VERIFY SPACE AVAILABILITY PRIOR TO PURCHASE. MODIFY & RE-CONNECT EXISTING SUPPLY DUCTWORK TO SUIT NEW INSTALLATION.
 - PROVIDE SCENT AIR SYSTEM PER SCHEDULE. COORDINATE SYSTEM TYPE, QUANTITY, FRAGRANCE TYPE, UNIT COLOR & LOCATION WITH TZ PRIOR TO PURCHASE.
 - PROVIDE SUPPLY /RETURN GRILLE AT H/L. MODIFY EXISTING DUCTWORK OPENING TO SUIT NEW GRILLE INSTALLATION; COORDINATE WALL REPAIR WITH ARCH. DRAWINGS.
 - PROVIDE NATURAL GAS PIPING C/W SUPPORT TO CSA B149 STANDARD.
 - PROVIDE 150mm DEEP DRAINABLE LOUVER , EXTRUDED ALUMINUM, 0.164 SQ.M (1.76 SQ.FT) FREE AREA C/W WITH BIRD SCREEN, INSECT SCREEN & BACKDRAFT DAMPER, SIMILAR TO VENTEX 2430/2435 OR EQUIVALENT, COORDINATE LOUVER SIZE (610mmx610mm OR 508mmx712mm) WITH EXISTING OPENINGS. CONTRACTOR SHALL DEMOLISH/REPAIR WALL TO ACCOMMODATE NEW LOUVER INSTALLATION.
 - DISCONNECT & CAP EXISTING RETURN AIR CONNECTION AT CEILING LEVEL.

DOMESTIC HOT WATER TANK SCHEDULE

TAG	LOCATION	MANUF.	MODEL	QUANTITY	DRY WEIGHT (KG)	CAPACITY (LTS)	RECOVERY @ 100°F (LPH)	INPUT (KW)	ELECTRICAL (V/g/Hz)	HEIGHT (MM/IN)	DIAMETER (MM/IN)	NOTES
DHWT-1	BASEMENT	AO SMITH	BTRC365	1	-	246	1340	107	120/1/60	-	-	- EXISTING

MAKE UP AIR UNIT SCHEDULE

TAG	MANUF.	MODEL	SUPPLY FAN				GAS HEATING		WEIGHT (kg)	DIMENSION L X W X H (mm)	FILTER	ELECTRICAL SERVICE		NOTES
			AIR (L/s)	ESP (kPa)	KW	RPM	INPUT (kW)	OUTPUT (kW)				V/PH/Hz	FLA (AMPS)	
MUA-1	REZNOR	SCE-125	700	0.13	0.56	811	36.6	28.6	142	1500X640X820	MERV 8	208/1/60	6.3	1, 3, 4

- NEW
- EXISTING
- INDOOR HANGING CRADLE C/W VIBRATION ISOLATORS.
- MOTOR STARTER

EXHAUST FAN SCHEDULE

TAG	LOCATION	MANUF.	MODEL	QTY	WEIGHT (kg)	WHEEL DIA. (mm)	FAN PERFORMANCE		DIMENSION W X H X D (mm)	MOTOR		NOTES	
							MIN. FLOW (L/s)	ESP (kPa)		RPM	WATTS		VOLTAGE (V/g/Hz)
EF-1	MECHANICAL ROOM	GREEN HECK	SQ120	1	30	-	600	0.13	533X483X483	1725	373	120/1/60	1, 3, 4, 5

- NEW
- EXISTING
- SINGLE SPEED DIRECT DRIVE MOTOR, ALUMINUM CONSTRUCTION C/W FACTORY INSULATED HOUSINGS, HANGING RODS C/W ISOLATORS, CONNECTION TO FAN WITH 150MM MIN. NEOPRENE FLEXIBLE CONNECTIONS.
- PROGRAMMABLE THERMOSTAT & HUMIDSTAT, DUCT MOUNTED BACKDRAFT DAMPER, ALUMINUM FILTER.
- MOTOR STARTER

SCENT AIR SYSTEM

TAG	LOCATION	MANUF.	MODEL	QTY	WEIGHT (kg)	COVERAGE (SQ.M)	DISPERSION	DIMENSION L X W X H (mm)	ELECTRICAL		NOTES
									WATTS	VOLTAGE (V/g/Hz)	
SAS-1	MECHANICAL ROOM	AROMA360	VANGOGH 360	1	6.6	75	HVAC (OR) STANDALONE	254x140x330	14	120/1/60	1, 2, 3

- NOTES:
- NEW
 - STAND-ALONE, WALL-MOUNTABLE OR HVAC CONNECTION CAPABILITIES.
 - C/W BUILT-IN FAN, LOCKABLE FRAGRANCE COMPARTMENT, 500ML FRAGRANCE BOTTLE, PROGRAMMABLE LCD USER INTERFACE, EXTERNAL HVAC CONNECTOR & TUBING, 12V POWER ADAPTOR.

EXPANSION TANK SCHEDULE

TAG	MANUF.	MODEL	SYSTEM	QTY	DRY WEIGHT (KG)	TANK VOLUME (L)	ACCEPTANCE VOLUME (L)	DIMENSION ØD X H (mm)	NOTES
EXP-1	BELL & GOSSETT	PTA-5	DOMESTIC WATER	1	9.5	8	3	Ø203x356	- WATER - UNIT TO BE INSTALLED VERTICALLY
EXP-2	BELL & GOSSETT	PTA-20V	DOMESTIC WATER	1	19	30	12	Ø305x483	- WATER - UNIT TO BE INSTALLED VERTICALLY
EXP-3	BELL & GOSSETT	PTA-42V	DOMESTIC WATER	1	41	66	43	Ø406x610	- WATER - UNIT TO BE INSTALLED VERTICALLY

LEGEND

SYMBOL	DESCRIPTION
---	NEW WORK
---	EXISTING TO REMAIN
--- X ---	EXISTING TO BE DEMOLISHED
---	FUTURE PHASE 2
---	FLEX DUCT
---	CONTROL WIRE
---	DOMESTIC COLD WATER
---	DOMESTIC HOT WATER
---	DOMESTIC HOT WATER RETURN
---	CHWS - CHILLED WATER SUPPLY
---	CHWR - CHILLED WATER RETURN
---	CD - CONDENSATE DRAIN
---	F - FIRE LINE
---	SAN - SANITARY
---	SAN - SANITARY - BELOW
---	ST - STORM
---	ST - STORM - BELOW
---	VENT
---	PIPE RISE
---	PIPE DROP
---	TEE DROP
---	PIPE BREAK
---	UNION
---	PUMP
---	FLOW ARROW
---	GATE VALVE
---	BALL VALVE
---	THERMOSTAT
---	HUMIDISTAT
---	CARBON DIOXIDE SENSOR
---	OCCUPANCY SENSOR
---	BALANCING VALVE
---	CHECK VALVE
---	BACK WATER PREVENTION VALVE ASSEMBLY
---	Y-STRAINER
---	GLOBE VALVE
---	FLOOR DRAIN
---	P-TRAP

DRAWING LIST

DWG NO.	DESCRIPTION
M100	SPECIFICATIONS
M101	SPECIFICATIONS
M102	DETAILS, LEGEND AND DRAWING LIST
M103	DETAILS
M200	PLUMBING & HVAC-DEMOLITION
M201	PLUMBING & HVAC-MODIFICATION

LEGEND

SYMBOL	DESCRIPTION
⊙	WATER METER
⊖	CLEANOUT
⊖	CLEANOUT - UPRIGHT
⊖	HOSE BIBB
⊖	FIRE EXTINGUISHER
⊖	SPRINKLER - PENDANT HANGING
⊖	SPRINKLER - UPRIGHT EXPOSED
⊖	SPRINKLER - SIDEWALL
[FHC]	FIRE HOSE CABINET
[FHC]	FIRE HOSE CABINET - RECESSED
[FHC]	FIRE HOSE CABINET - SURFACE MOUNTED
⊖	TEMPERATURE GAUGE
⊖	2-WAY CONTROL VALVE - DDC
⊖	2-WAY CONTROL VALVE - PNEUMATIC
⊖	AUTOMATIC AIR VENT
⊖	MANUAL AIR VENT
⊖	PRESSURE GAUGE
⊖	RADIATOR
⊖	BASEBOARD HEATER
⊖	SUPPLY DUCT - UP
⊖	SUPPLY DUCT - DOWN
⊖	RETURN DUCT - UP
⊖	RETURN DUCT - DOWN
⊖	EXHAUST DUCT - UP
⊖	EXHAUST DUCT - DOWN

⊖	THERMALLY LINED DUCTWORK UNLESS INDICATED OTHERWISE
⊖	ACOUSTICALLY LINED DUCTWORK
⊖	ACOUSTICALLY LINED DUCTWORK (SINGLE LINE)
⊖	FLEX DUCT CONNECTION
⊖	AIR FLOW
⊖	DUCT REDUCER
⊖	BALANCING DAMPER
⊖	FIRE DAMPER
⊖	SMOKE DAMPER
⊖	BACK DRAFT DAMPER
⊖	DIFFUSER TAG
⊖	X = TYPE: A, B, C, ETC. (REFER TO SPECIFICATIONS FOR MORE DETAIL)
⊖	Y = AIR FLOW (L/s)
⊖	Z = FLEX DUCT SIZE (mm)
⊖	DETAIL CALLOUT
⊖	X = DETAIL NUMBER/LETTER
⊖	Y = DRAWING NUMBER
[M]	MOTORIZED DAMPER
[VFD]	VARIABLE FREQUENCY DRIVE
⊖	DIFFERENTIAL PRESSURE
⊖	SUPPLY DIFFUSER

PLUMBING FIXTURE SCHEDULE

TAG	C.W.	H.W.	WASTE	REMARKS
WC-1	25mm	-	75mm	
WC-2	25mm	-	75mm	ALTERNATE PRICING
WC-3	25mm	-	75mm	
WC-4	25mm	-	75mm	ALTERNATE PRICING
UR-1	19mm	-	75mm	
TS-1	13mm	13mm	50mm	5 FAUCETS & 3 DRAIN PIPES PER SINK
FD-1	-	-	75mm	
MV-1	19mm	19mm	-	25mm OUTLET

PLUMBING FIXTURE SCHEDULE

TAG	PRODUCTS	DESCRIPTION	ACCESSORIES
WC-1	TOILET	SLOAN, FLUSHOMETER ASSEMBLY# 3910275, WATER CLOSET# 2102029, 381 MM HIGH TOILET, VITREOUS CHINA, FLOOR MOUNTED, FLOOR OUTLET, 6.0 L (1.6 US GAL) PER FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION.	SLOAN #3910275, POLISHED CHROME FINISH, EXPOSED FLUSHOMETER FOR TOP SPUD TOILET, SENSOR ACTIVATE, BATTERY POWERED, MECHANICAL OVERRIDE FLUSH VALVE, PROVIDE WALL FLANGE. (SAME MATERIAL AS THE CONNECTING PIPE DRAIN), WITH ALL BRASS BOLTS AND WITH RUBBER GASKET.
WC-2	TOILET	SLOAN, FLUSHOMETER ASSEMBLY# 3910276, WATER CLOSET# 2102459, WHITE VITREOUS CHINA, WALL MOUNTED, WALL OUTLET, 4.8 L (1.28 US GAL) PER FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION.	SLOAN #3910276, POLISHED CHROME FINISH, EXPOSED FLUSHOMETER FOR TOP SPUD TOILET, SENSOR ACTIVATE, BATTERY POWERED, MECHANICAL OVERRIDE FLUSH VALVE, ADJUSTABLE TOILET CARRIER C/W ALL FASTENERS, HANGERS, GASKETS & COUPLINGS.
WC-3	TOILET	SLOAN, FLUSHOMETER ASSEMBLY# 3910275, WATER CLOSET# 2102029, 381 MM HIGH TOILET, VITREOUS CHINA, FLOOR MOUNTED, FLOOR OUTLET, 6.0 L (1.6 US GAL) PER FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION. BARRIER FREE.	SLOAN #3910275, POLISHED CHROME FINISH, EXPOSED FLUSHOMETER FOR TOP SPUD TOILET, SENSOR ACTIVATE, BATTERY POWERED, MECHANICAL OVERRIDE FLUSH VALVE, PROVIDE WALL FLANGE. (SAME MATERIAL AS THE CONNECTING PIPE DRAIN), WITH ALL BRASS BOLTS AND WITH RUBBER GASKET. EXTRA HEAVY DUTY TOILET SEAT, SOLID PLASTIC WITH ANTIMICROBIAL SURFACE, OPEN FRONT.
WC-4	TOILET	SLOAN, FLUSHOMETER ASSEMBLY# 3910276, WATER CLOSET# 2102459, WHITE VITREOUS CHINA, WALL MOUNTED, WALL OUTLET, 4.8 L (1.28 US GAL) PER FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION.BARRIER FREE.	SLOAN #3910276, POLISHED CHROME FINISH, EXPOSED FLUSHOMETER FOR TOP SPUD TOILET, SENSOR ACTIVATE, BATTERY POWERED, MECHANICAL OVERRIDE FLUSH VALVE, ADJUSTABLE TOILET CARRIER C/W ALL FASTENERS, HANGERS, GASKETS & COUPLINGS. EXTRA HEAVY DUTY TOILET SEAT, SOLID PLASTIC WITH ANTIMICROBIAL SURFACE, OPEN FRONT.
TS-1	SINK	EVER GREEN, CUSTOM MADE SLIM PROFILE BOX TROUGH UNIVERSAL ACCESS' SINK.	SLOAN #EAF-225 SINGLE HANDLE POLISHED BRASS FAUCET, DECK MOUNTED, INFRARED, AERATED SPRAY TYPE, INTEGRATED SIDE MIXER, P-TRAP, SINK SUPPORT BRACKETS.
UR-1	URINAL	SLOAN, URINAL#1107009, FLUSHOMETER ASSEMBLY#3910276, WHITE VITREOUS CHINA, WALL MOUNTED, WALL OUTLET, 1.9 L (0.5 US GAL) PER FLUSH, WASH DOWN FLUSHING.	SLOAN #3910276, POLISHED CHROME FINISH, EXPOSED FLUSHOMETER FOR TOP SPUD TOILET, SENSOR ACTIVATE, BATTERY POWERED, MECHANICAL OVERRIDE FLUSH VALVE, FIXTURE CARRIER, WALL ACCESS CLEANOUT C/W ALL FASTENERS, GASKETS & COUPLINGS.
MV-1	THERMOSTATIC MIXING VALVE	MODEL: LAWLOR 801-RB-86506, THERMOSTATIC, VALVE SHALL CONTROL TEMPERATURE FROM LOW OF 1GPM, 25GPM AT 10PSI DROP ACROSS THE VALVE, TEMP. RANGE: 90°-120°F, SET POINT OF 110°F, 125PSI BRONZE BODY, STAINLESS STEEL SPRINGS, INTEGRAL CHECK VALVE ON HOT AND COLD INLETS.	STAINLESS STEEL CABINET WITH LOCK, C/W THERMOMETER, SHUTOFF VALVES & FITTING FOR A FULLY FUNCTIONAL SYSTEM.

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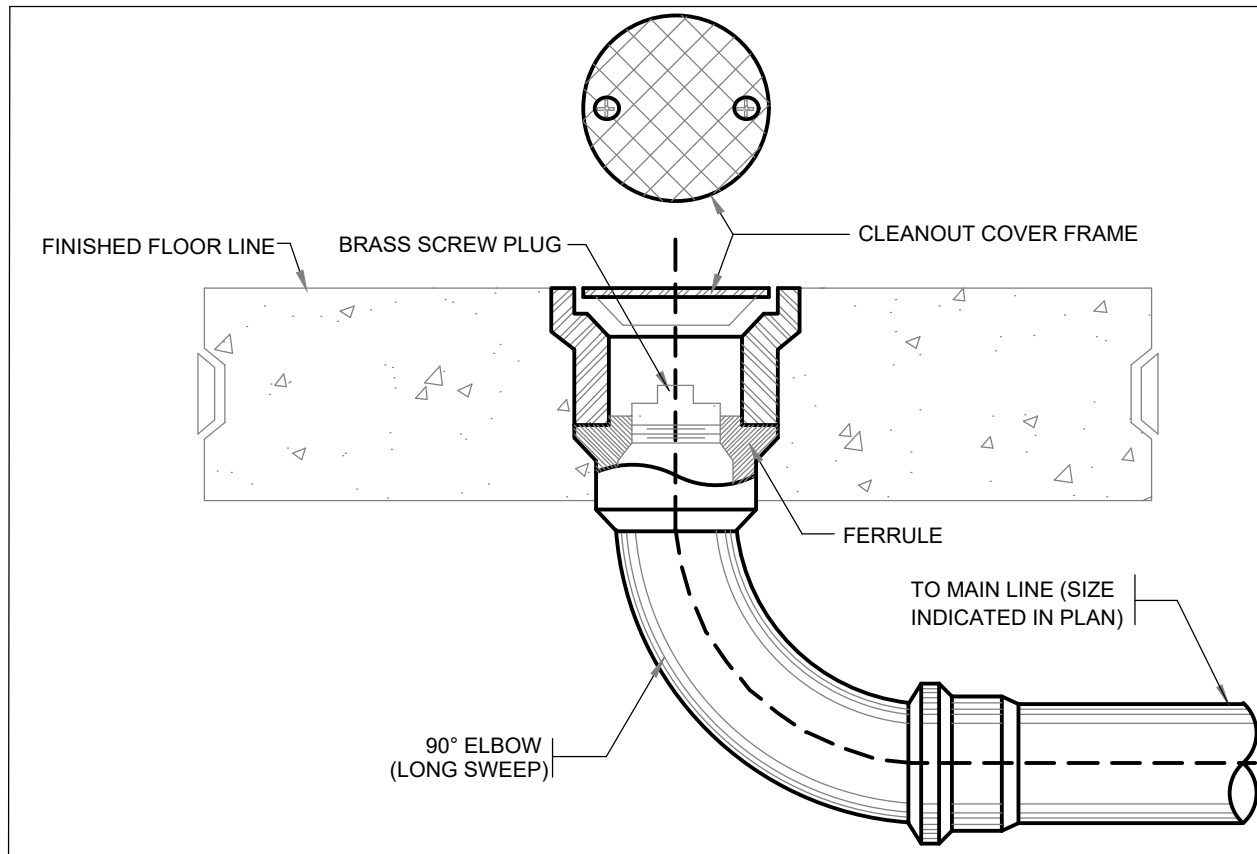
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 TORONTO, ONTARIO, M1B 5K7

MECHANICAL
 DETAILS, LEGEND AND DRAWING LIST

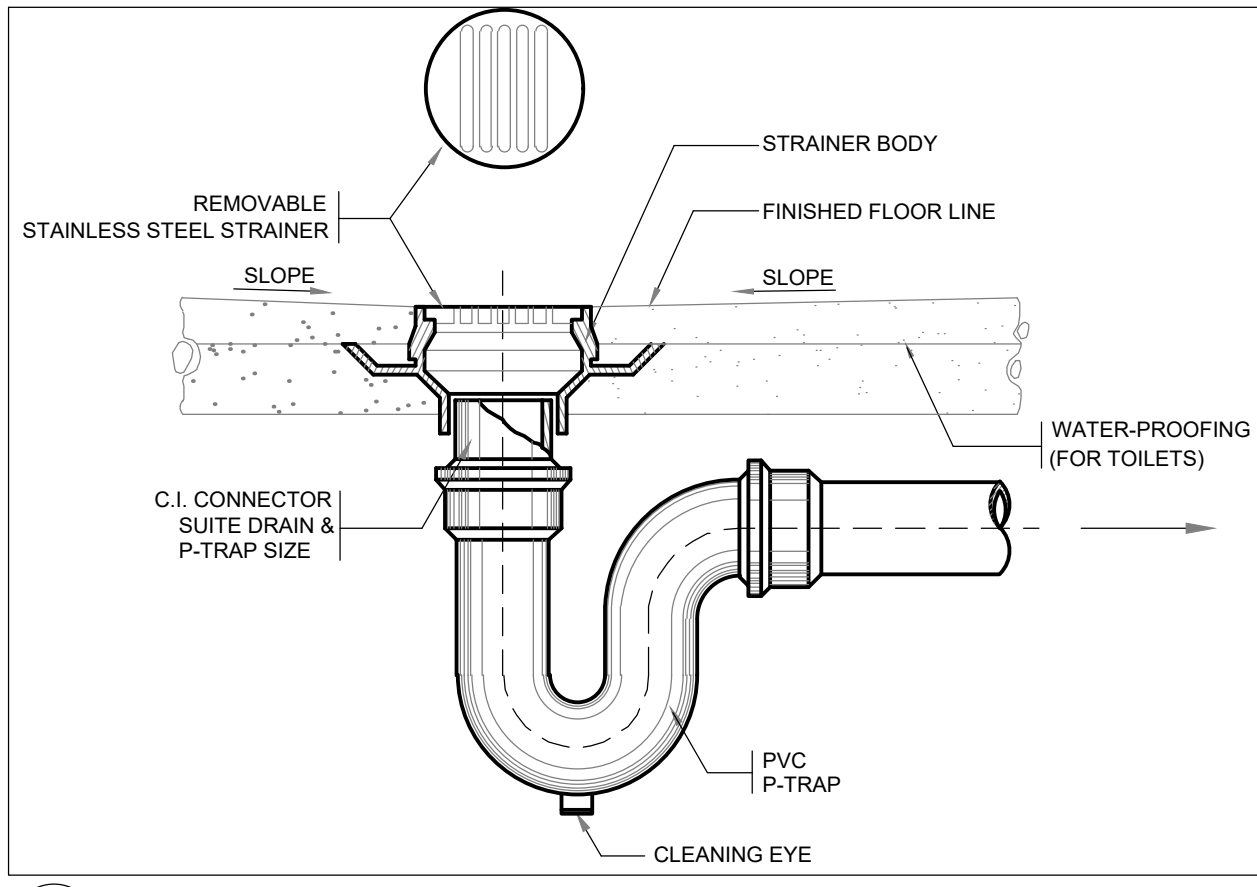
Project number	18153
Date	05.03.2019
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M102

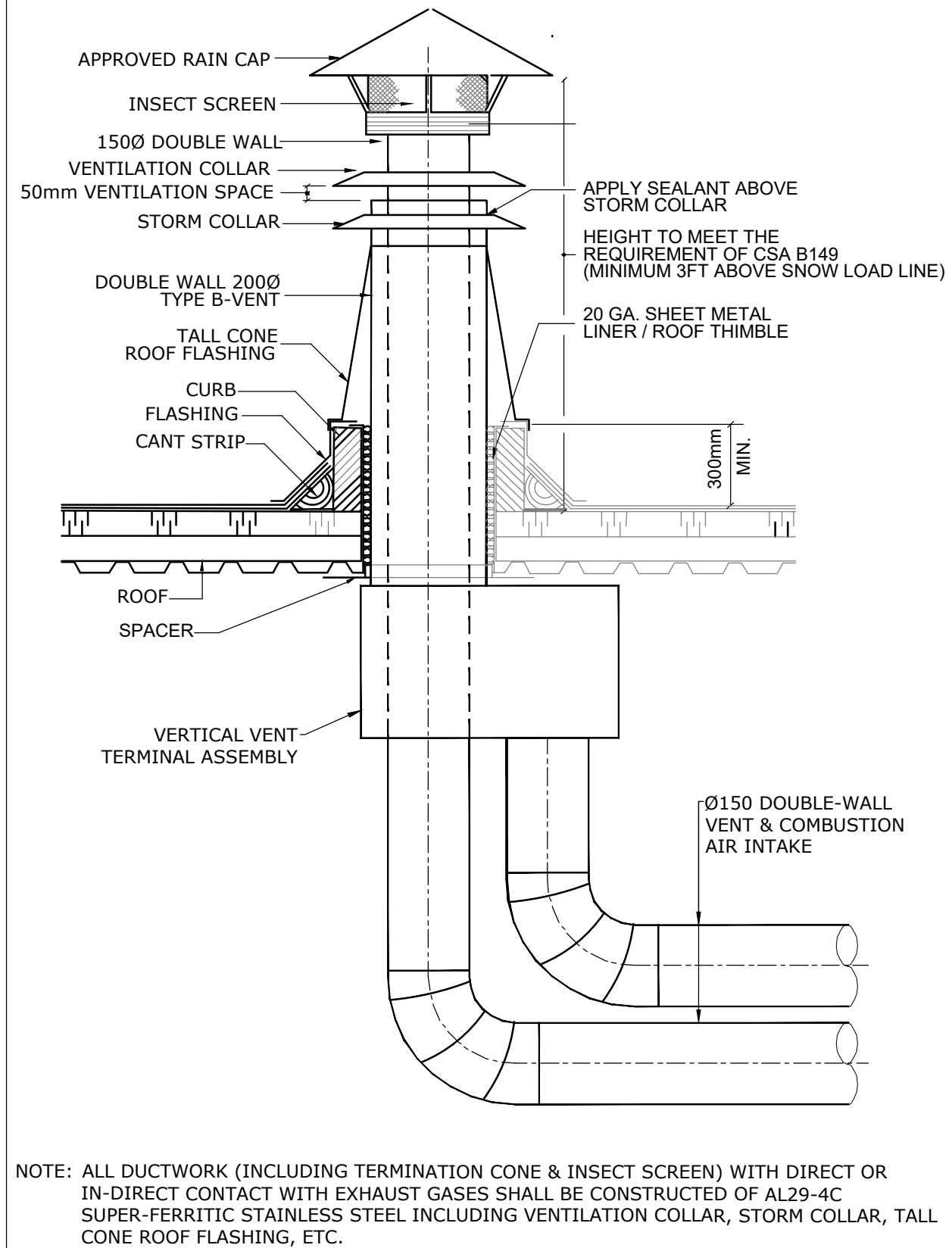
Scale -



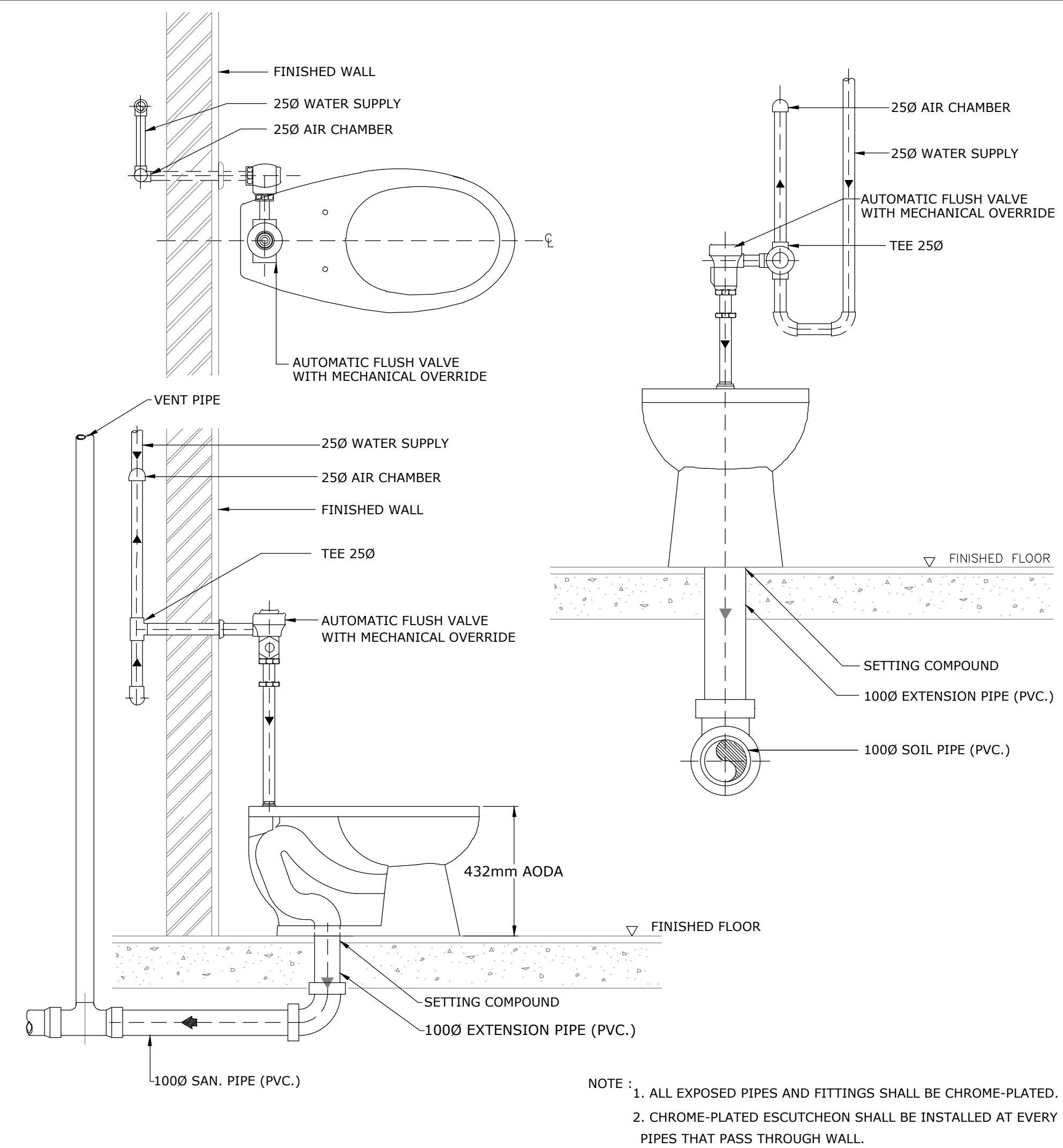
1 FLOOR CLEAN OUT DETAIL
M103 SCALE: N.T.S.



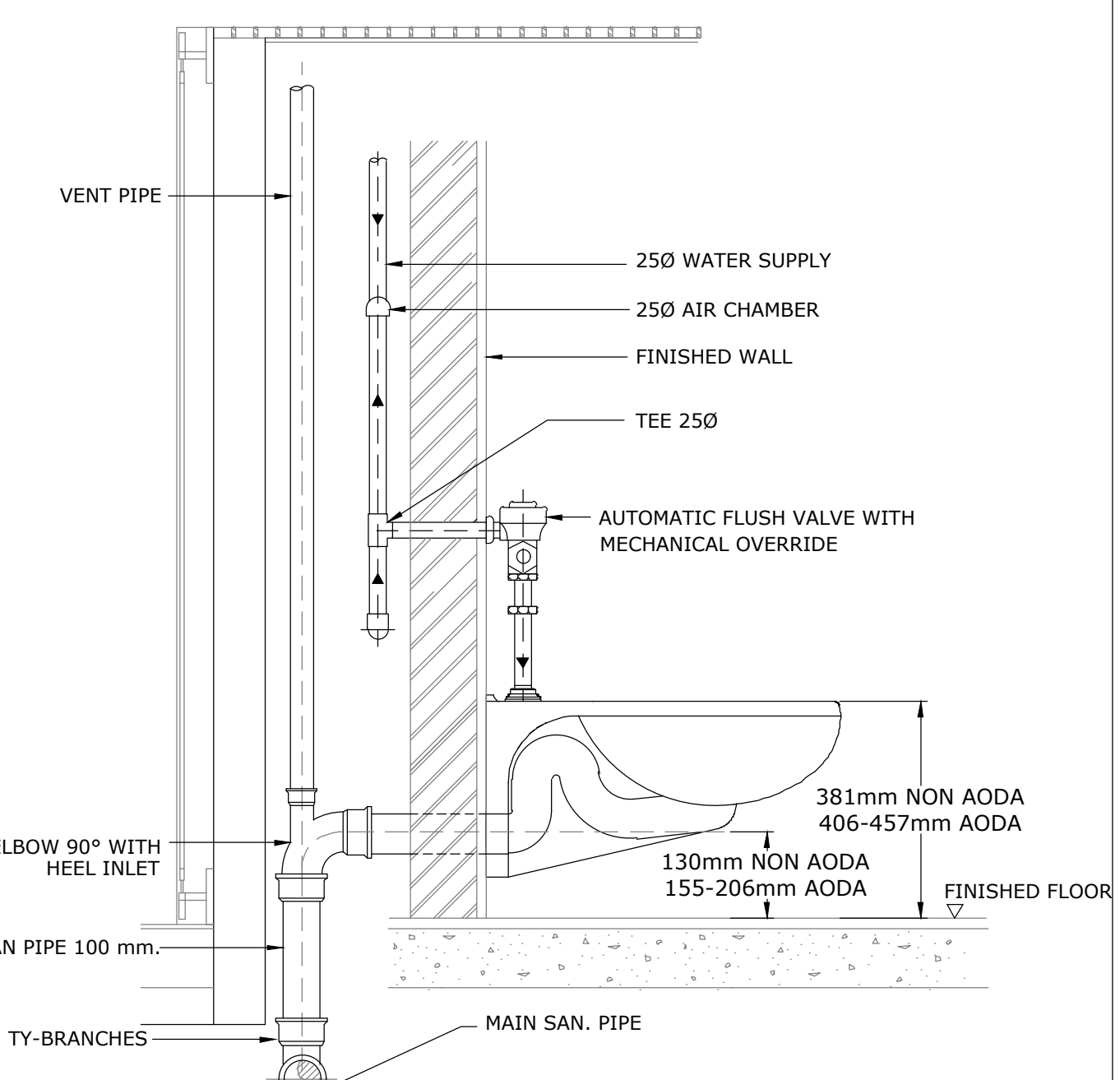
2 FLOOR DRAIN DETAIL
M103 SCALE: N.T.S.



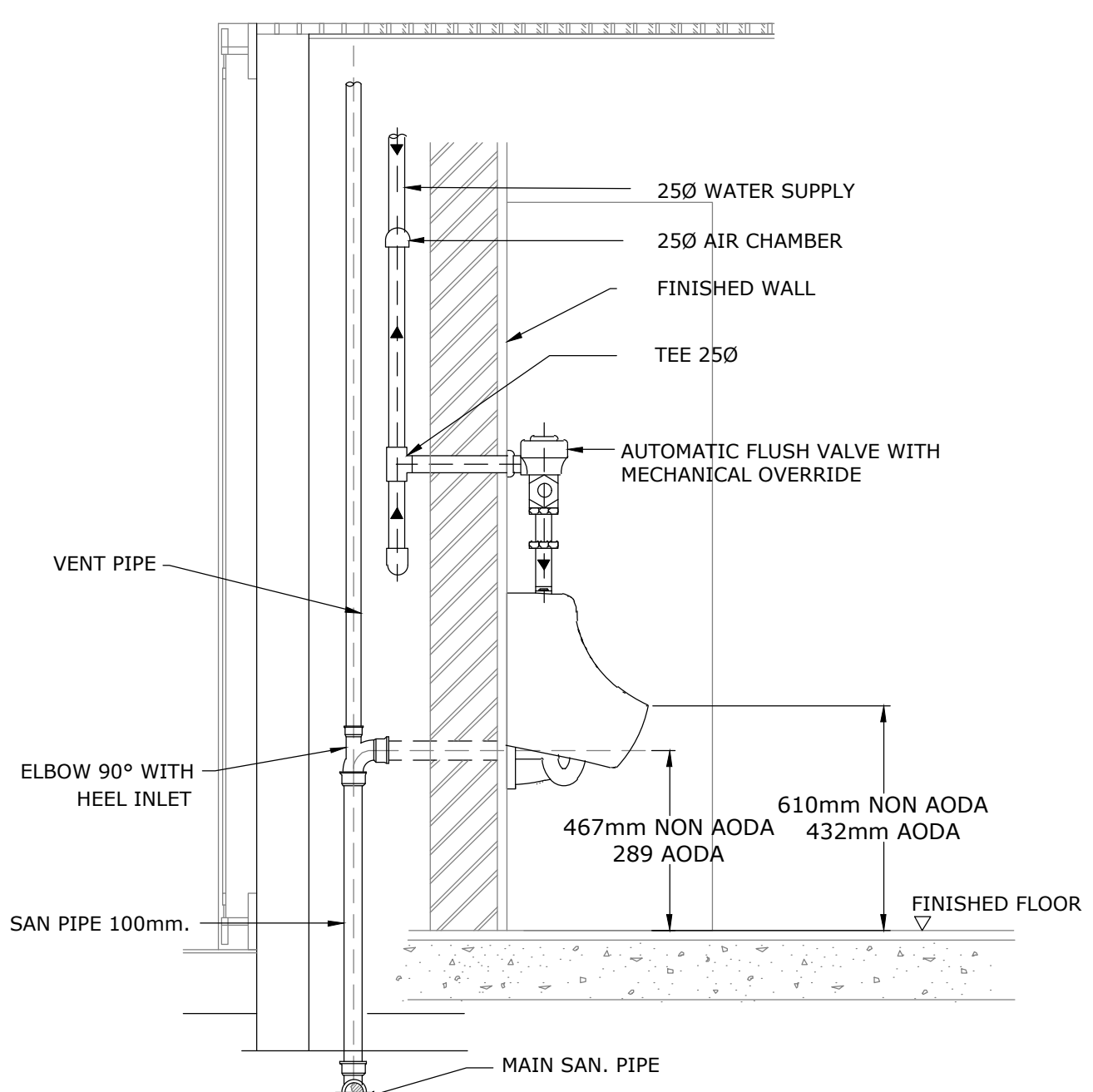
3 COMBUSTION VENTING DETAIL
M103 SCALE: N.T.S.



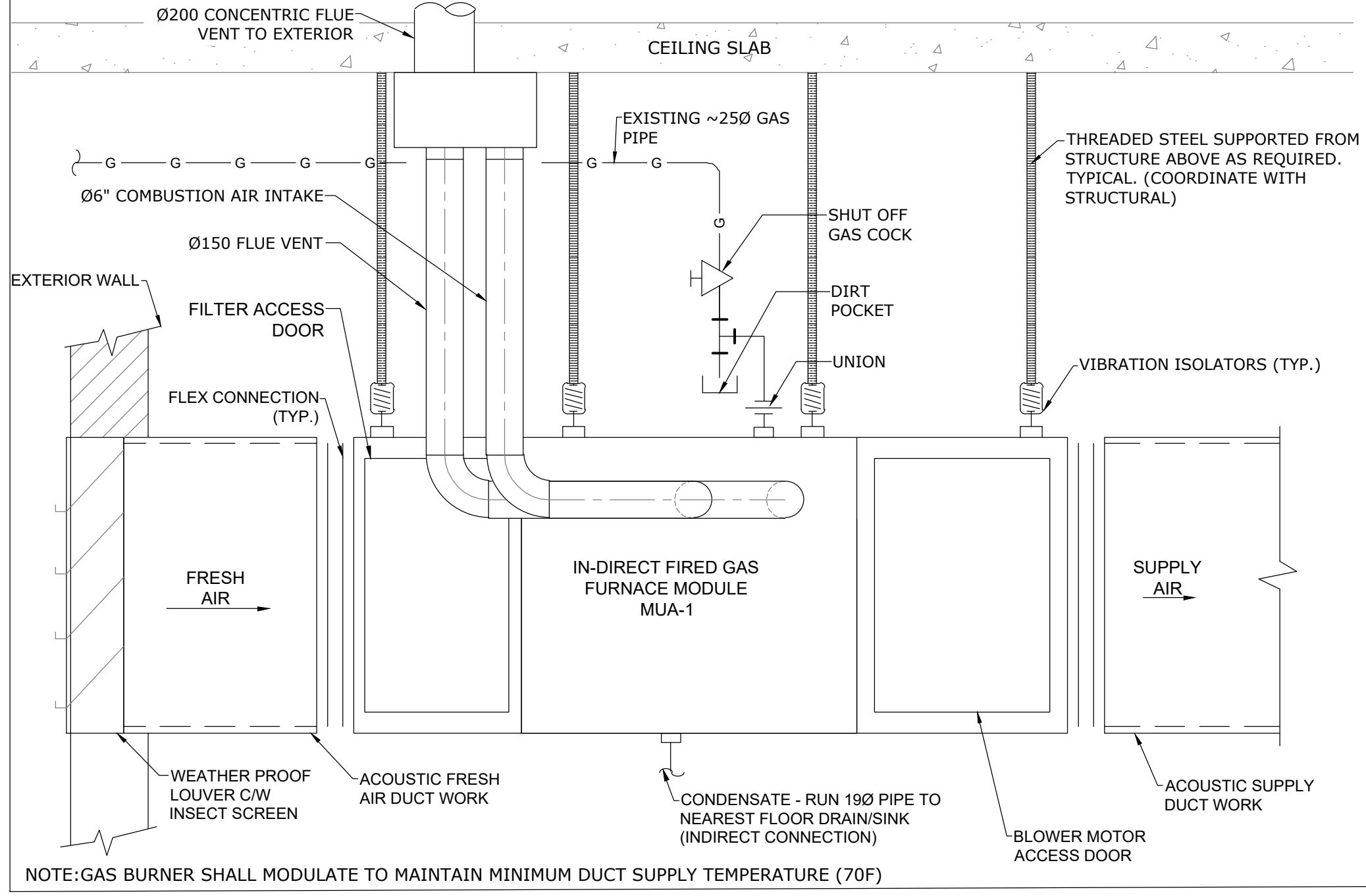
4 TYPICAL FLOOR MOUNTED WATER CLOSET INSTALLTION DETAIL (WC-1, WC-3)
M103 SCALE: N.T.S.



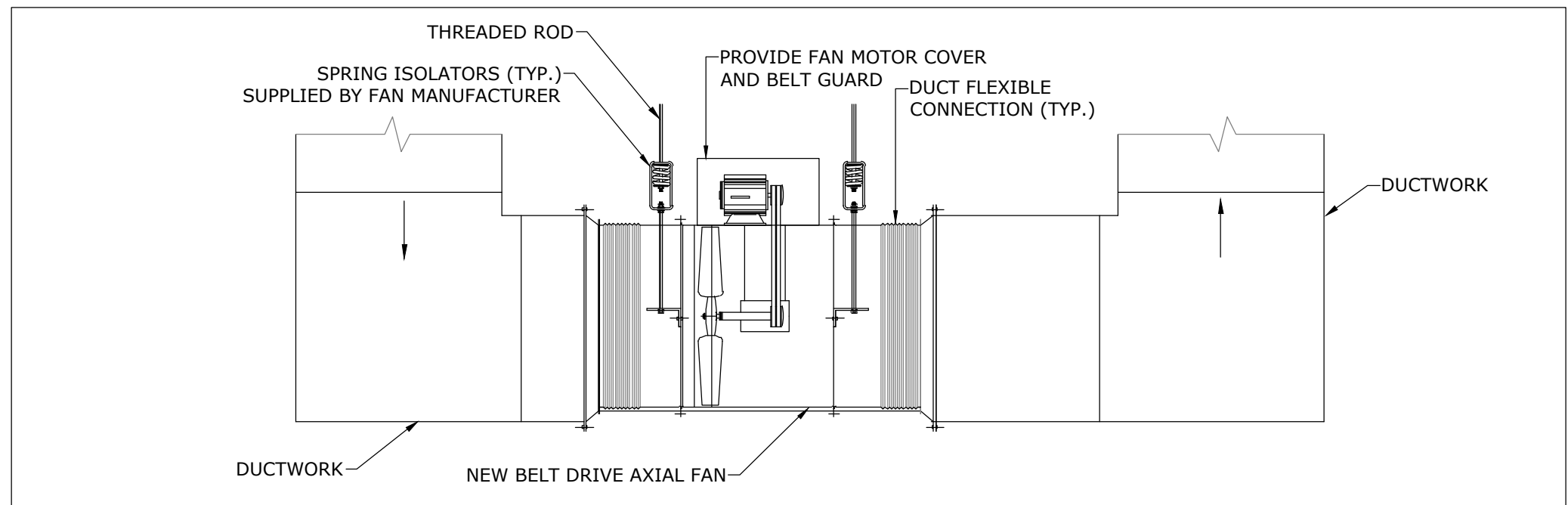
5 TYPICAL WALL MOUNTED WATER CLOST INSTALLTION DETAIL (WC-2, WC-4)
M103 SCALE: N.T.S.



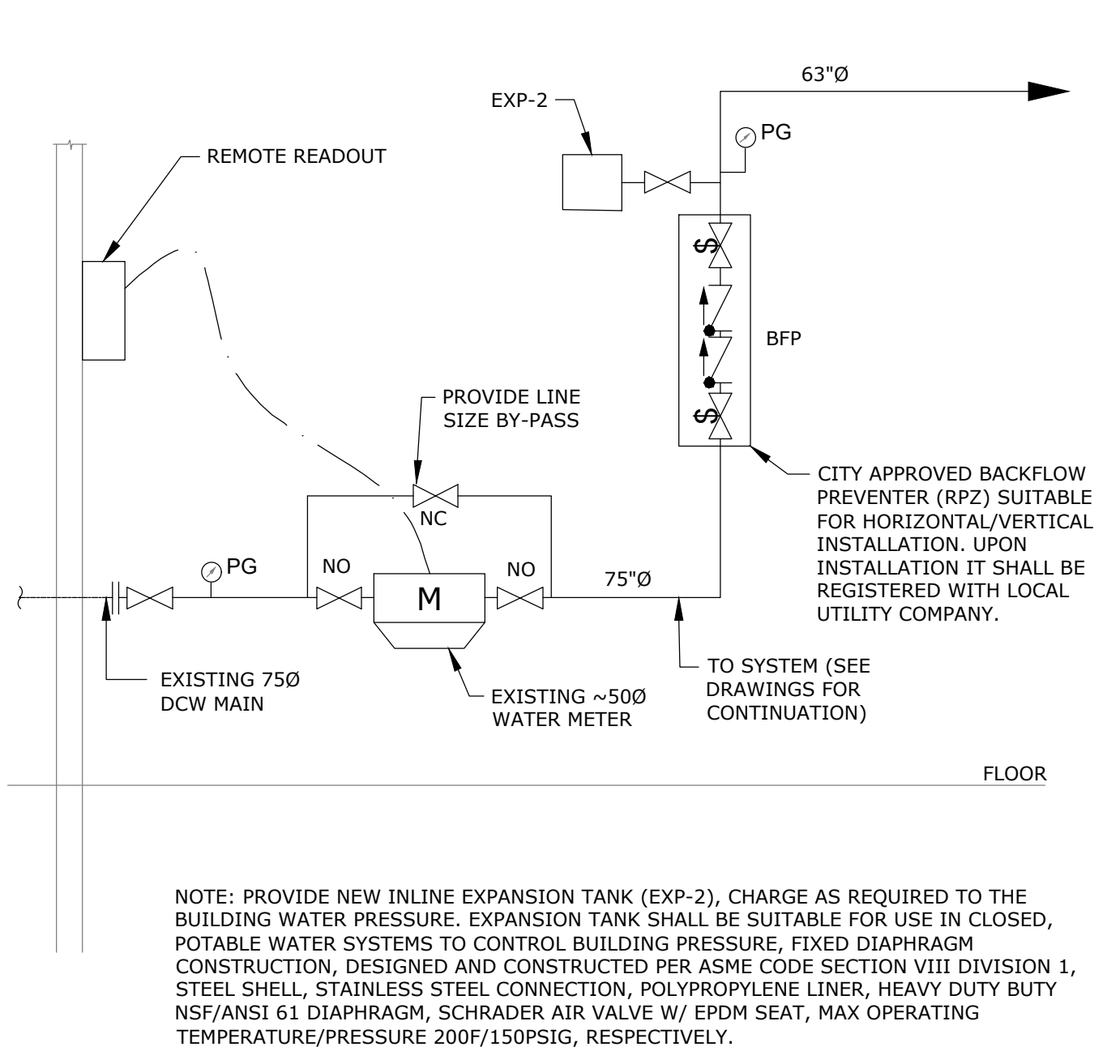
6 TYPICAL WALL MOUNTED URINAL INSTALLTION DETAIL
M103 SCALE: N.T.S.



7 CEILING HUNG MUA INSTALLATION DETAIL
M103 SCALE: N.T.S.



8 SQUARE IN-LINE CENTRIFUGAL FAN DETAILS
M103 SCALE: N.T.S.



9 TYPICAL WALL MOUNTED URINAL INSTALLTION DETAIL
M103 SCALE: N.T.S.



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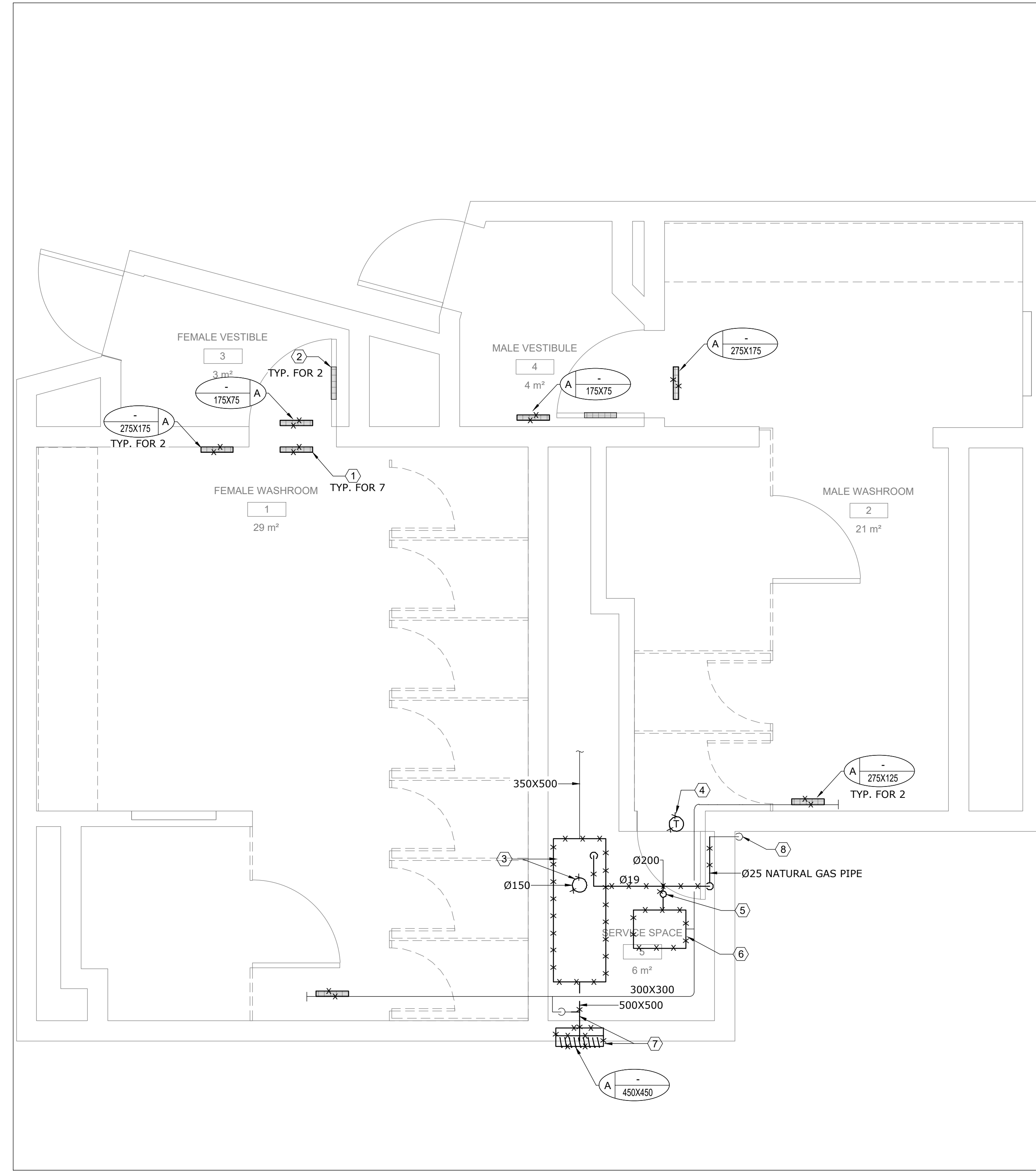
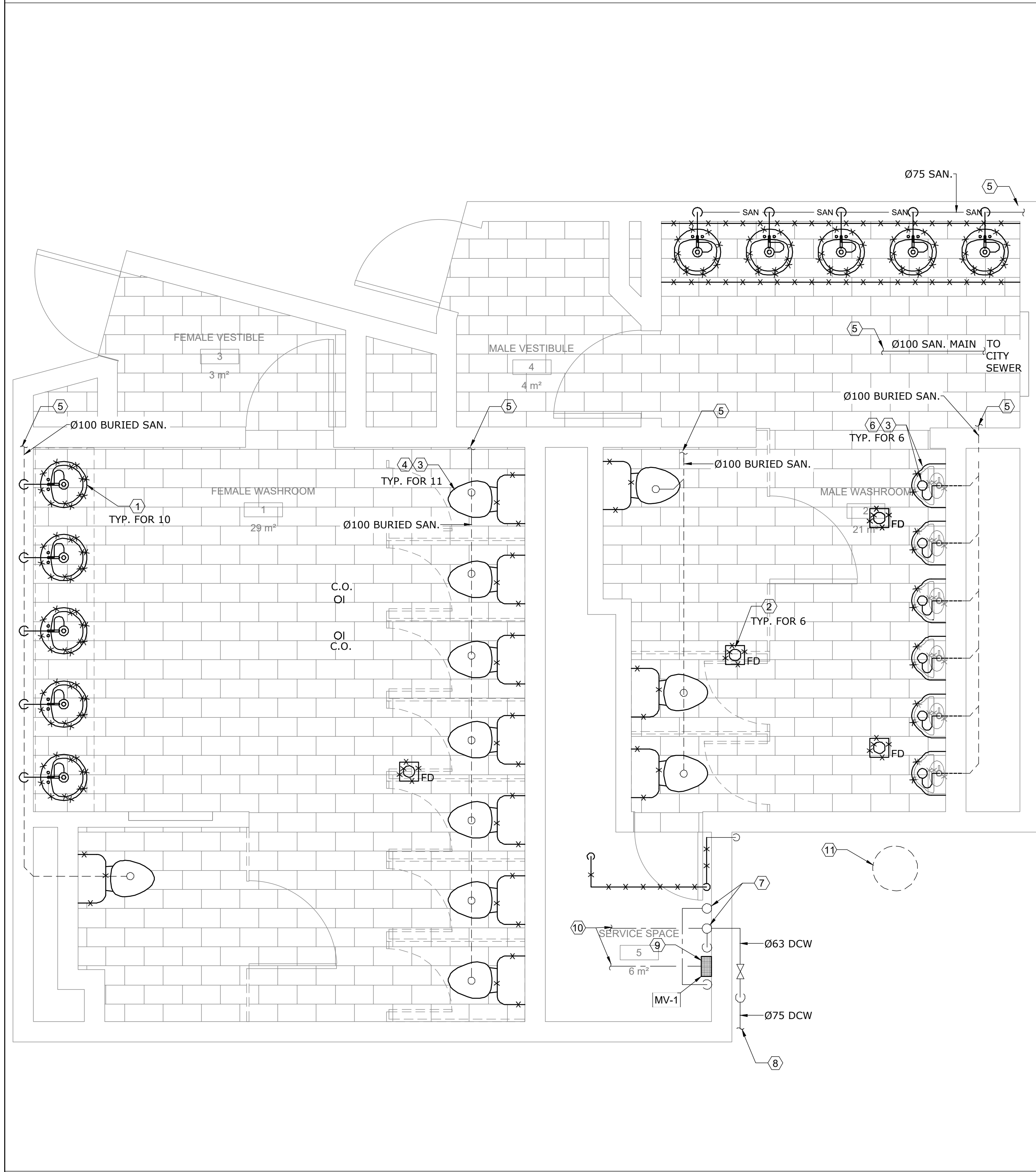
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MECHANICAL DETAILS

Project number	18153
Date	05.03.2019
Drawn by	SV
Checked by	DN

M103

Scale: 1:50



1 PLUMBING DEMOLITION
 M200 SCALE: 1:30

2 HVAC DEMOLITION
 M200 SCALE: 1:30



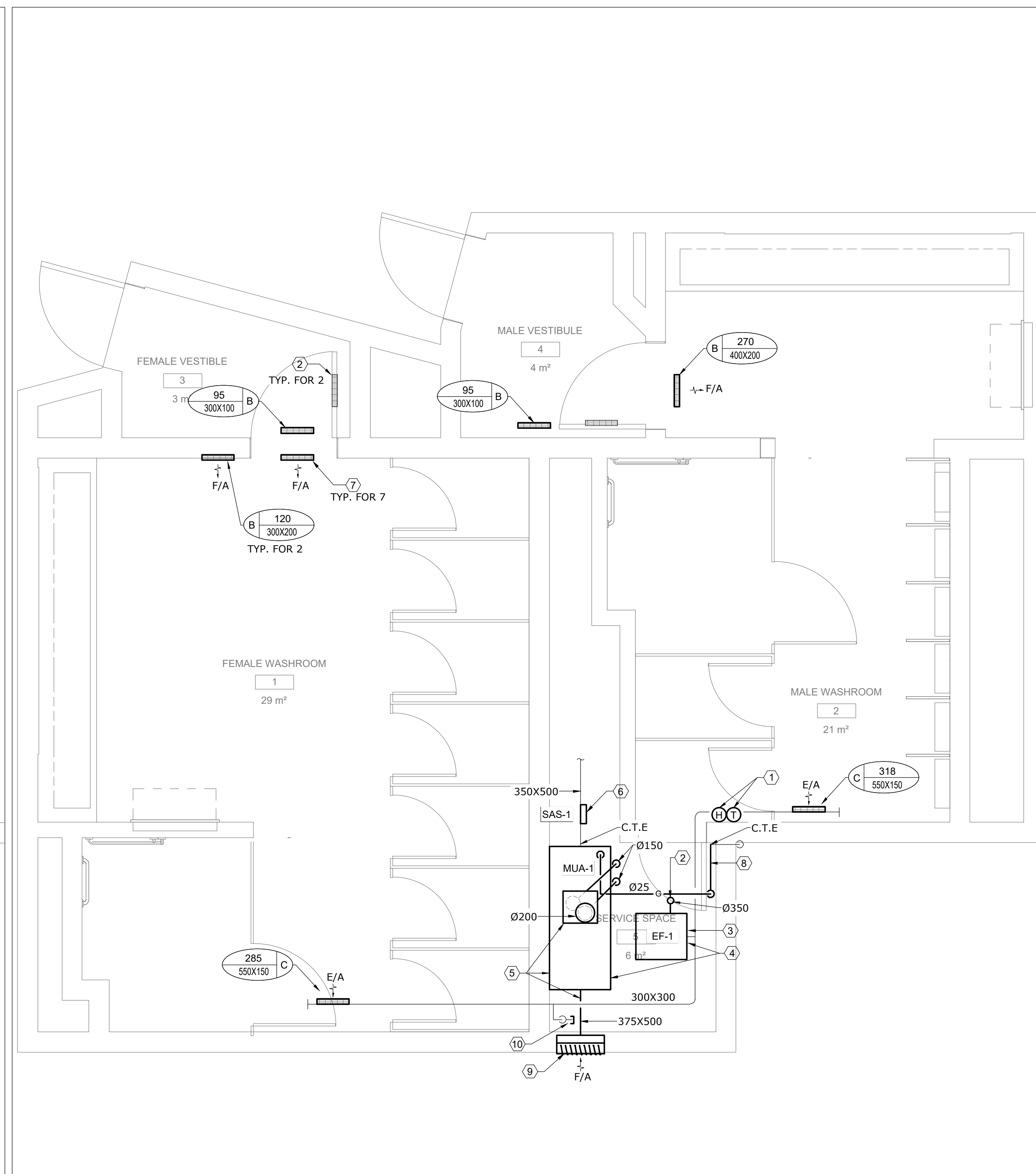
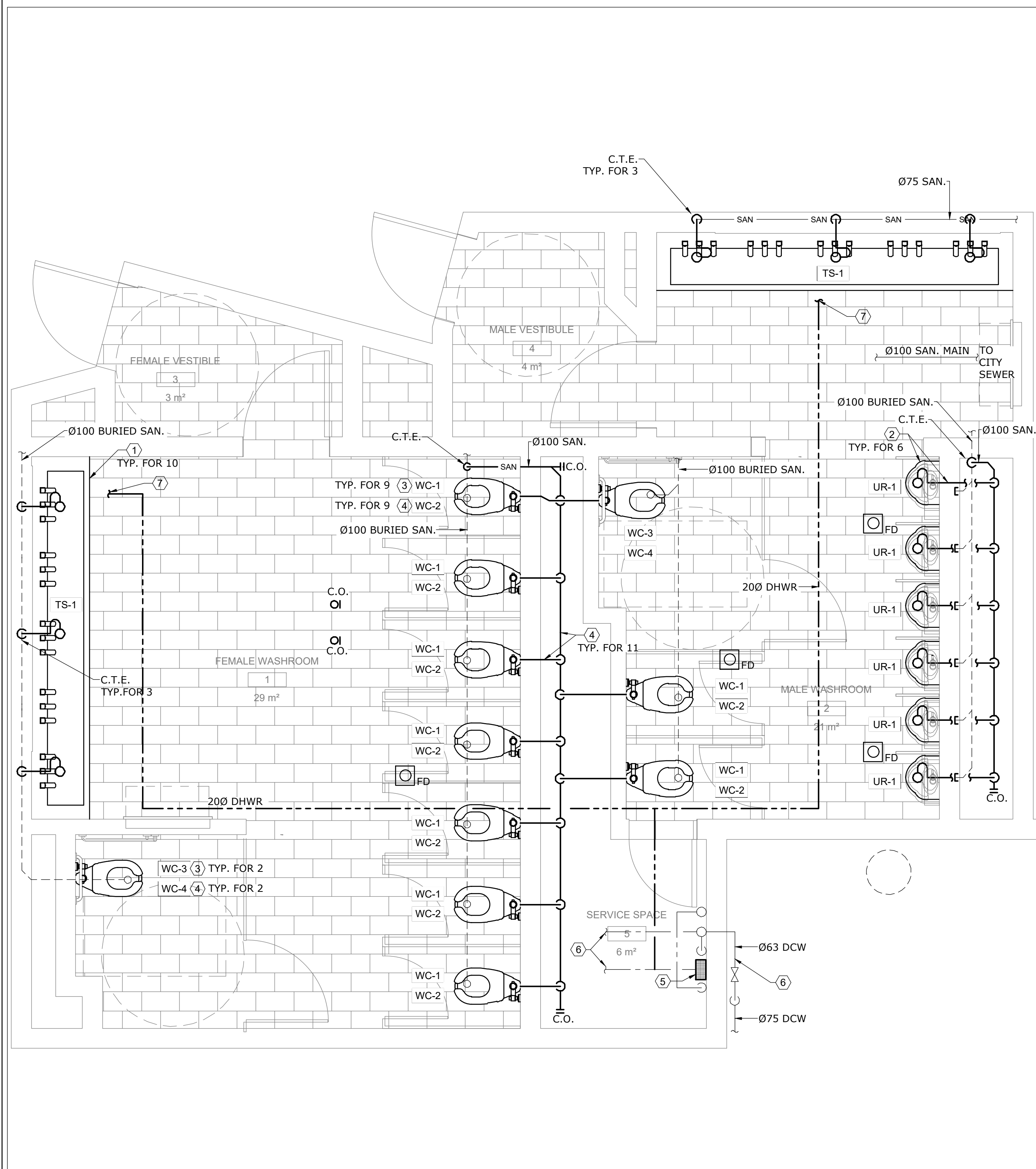
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No.	Description	Date
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TORONTO ZOO
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CARIBOU CAFE
 PLUMBING AND HVAC
 DEMOLITION
 Project number 18153
 Date 05.03.2019
 Drawn by SV
 Checked by DN

M200
 Scale 1:20



1 PLUMBING MODIFICATION
 M201 SCALE: 1:30

2 HVAC MODIFICATION
 M201 SCALE: 1:30



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TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7

CARIBOU CAFE
 PLUMBING AND HVAC
 MODIFICATION

Project number	18153
Date	05.03.2019
Drawn by	SV
Checked by	DN

M201

Scale 1:20



SUB-CONSULTANTS:



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Description	Date
1 ISSUED FOR 50% REVIEW	22APR19
2 ISSUED FOR 100% REVIEW	21MAY19
3 ISSUED FOR TENDER REVIEW	30JUL19

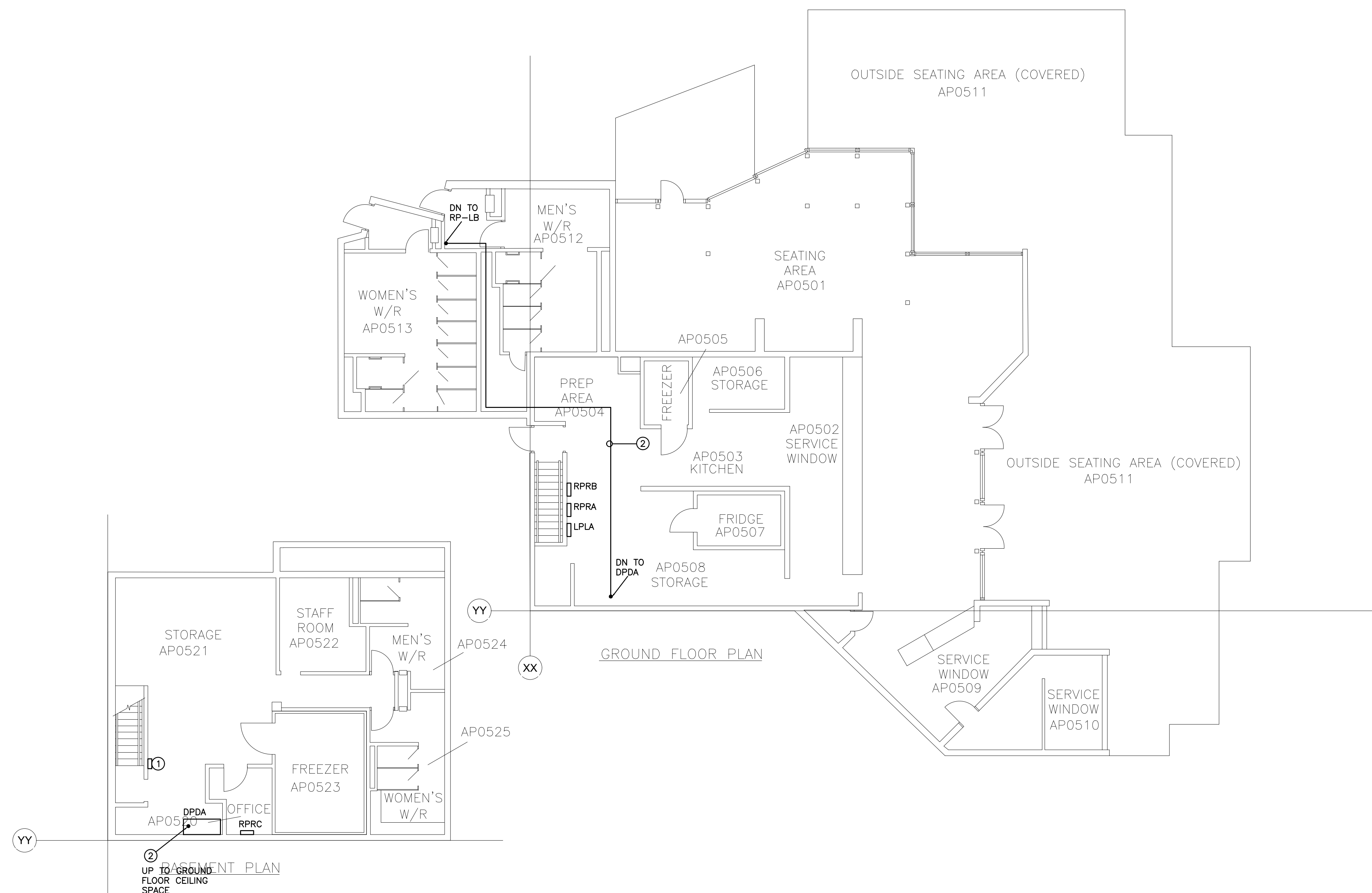
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 WASHROOM UPGRADES - CARIBOU CAFE

**ELECTRICAL PLAN
 BUILDING**

Project number 19064
 Date APRIL, 2019
 Drawn by KZ
 Checked by HDC

E-2.0

Scale 1 : 100



- (N-1) ROUTE ALL CONDUIT SYSTEMS, ETC AROUND EXISTING DUCT WORK, PIPING, ETC AND AROUND NEW PIPING, DUCT WORK, ETC AS REQUIRED TO ACCOMMODATE INSTALLATION.
- (N-2) CONDUIT ROUTINGS SHOWN ARE APPROXIMATE ONLY. EXACT ROUTING MUST BE CONFIRMED WITH LANDLORD AND WITH CONSULTANT PRIOR TO INSTALLATION.
- (N-3) REMOVE AND RELOCATE EXISTING FIRE ALARM SYSTEM DEVICES, LIGHT FIXTURES, EXIT SIGNS, PA SPEAKERS, ETC TO ACCOMMODATE CONDUIT ROUTINGS AND INSTALLATION. EXISTING FIRE ALARM SYSTEM DEVICES, LIGHT FIXTURES, EXIT SIGNS, ETC NOT SHOWN ON DRAWINGS.

- ① EXISTING FIRE ALARM SYSTEM CONTROL PANEL - HONEYWELL NOTIFIER AFP-200
- ② APPROXIMATE ROUTING OF FEEDERS / BRANCH CIRCUITS, ETC. REFER TO DRAWING NO. E-7.1 FOR ADDITIONAL REQUIREMENTS.

CLIENT:



SUB-CONSULTANTS:



HCC ENGINEERING
 DESIGN AND TECHNOLOGY SERVICES GROUP

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3 ISSUED FOR TENDER REVIEW	30JUL19

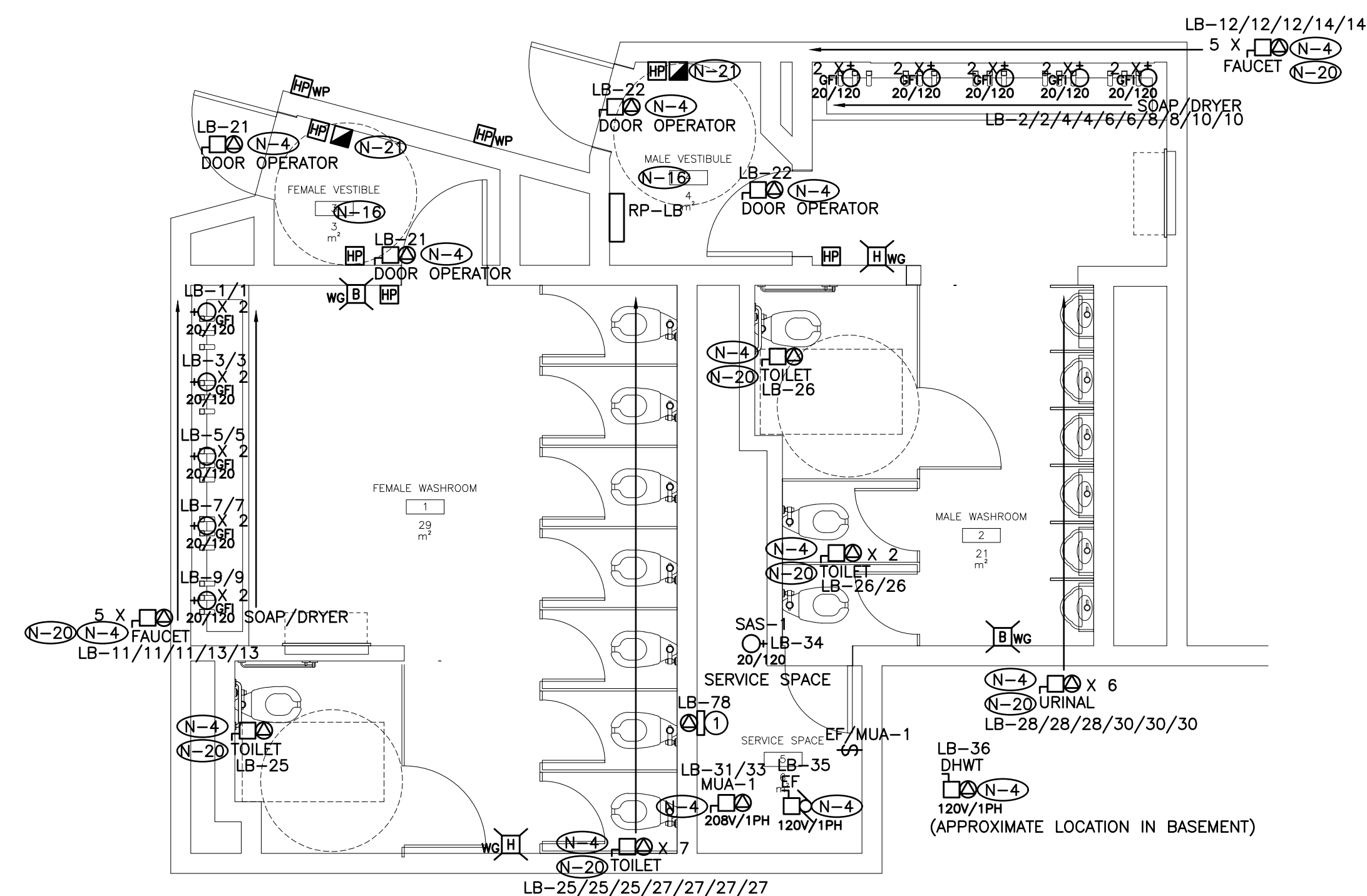
TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

ELECTRICAL PLAN

Project number	19064
Date	APRIL, 2019
Drawn by	KZ
Checked by	HDC

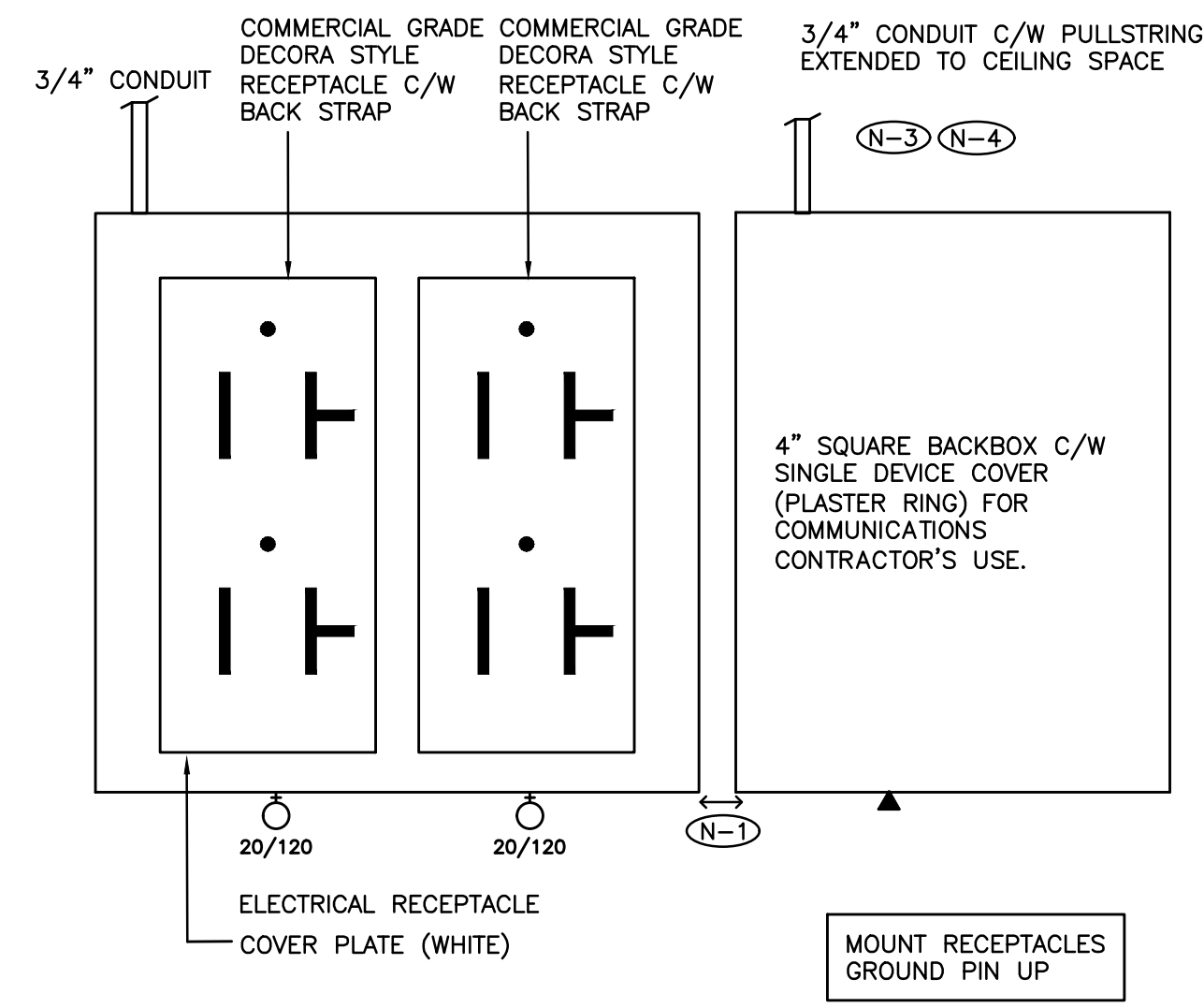
E-2.1

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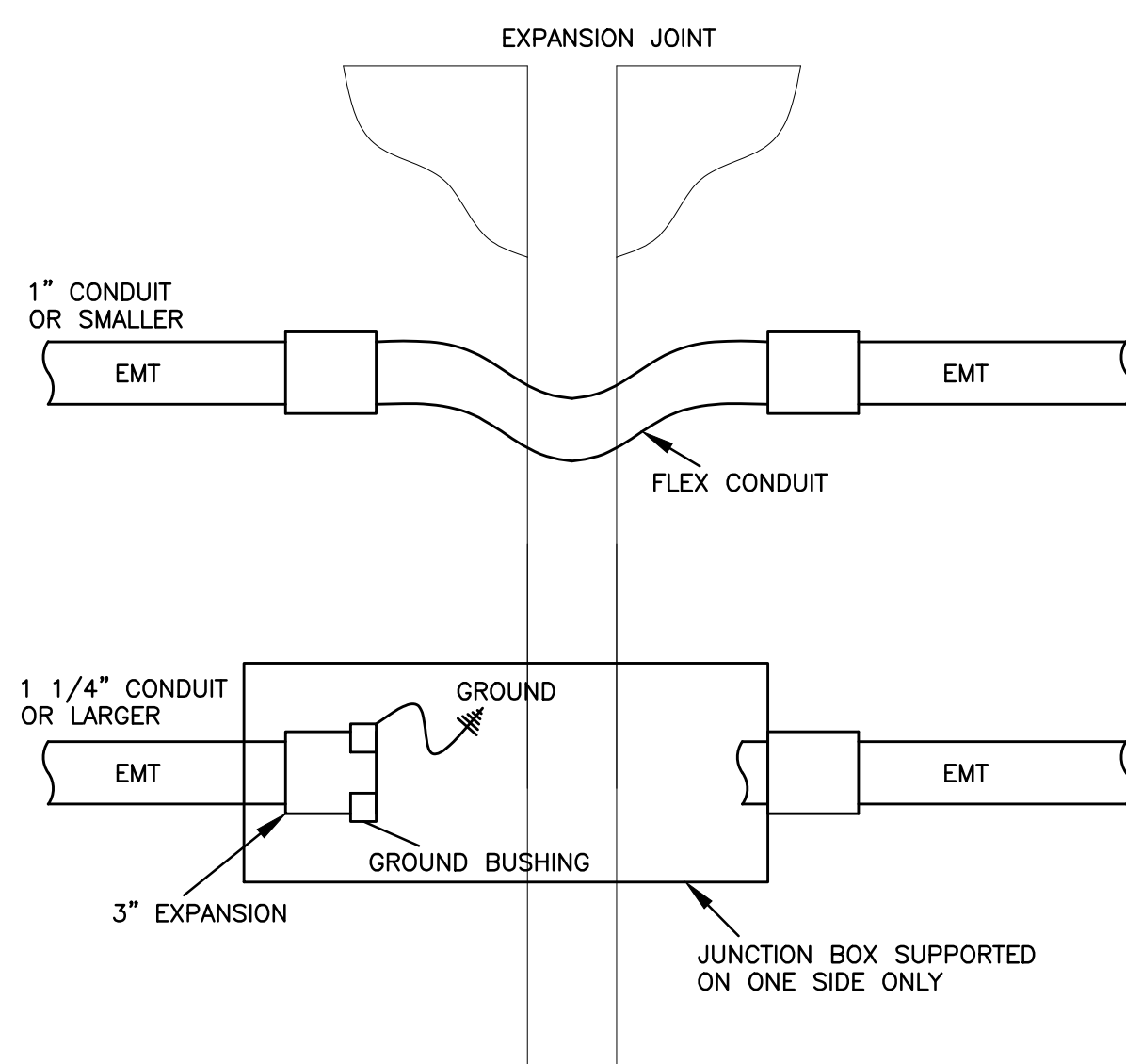
- (N-1) EXACT LOCATION OF ALL DEVICES AND RESPECTIVE HEIGHTS TO BE COORDINATED ON SITE WITH ARCHITECT.
- (N-2) NEATLY LABEL ALL FLOOR MOUNTED AND WALL DEVICE BOX COVERS AND UTILITY POLES WITH CORRESPONDING PANEL NAMES AND CIRCUIT NUMBERS. UTILIZE SELF ADHESIVE MECHANICALLY PRINTED LABELS.
- (N-3) CIRCUIT NUMBERS MAY NOT BE CHANGED WITHOUT PRIOR APPROVAL FROM THE ELECTRICAL ENGINEER.
- (N-4) CONFIRM BREAKER AND RECEPTACLE REQUIREMENTS PRIOR TO ORDERING DISTRIBUTION.
- (N-5) CONFIRM BREAKER/FUSE AND RECEPTACLE/DISCONNECT REQUIREMENTS PRIOR TO INSTALLATION.
- (N-6) NOT USED.
- (N-7) COORDINATE WIRING REQUIREMENTS FOR MECHANICAL EQUIPMENT ON SITE WITH MECHANICAL CONTRACTOR.
- (N-8) CONFIRM ELECTRICAL REQUIREMENTS AND EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION OF ELECTRICAL SERVICES.
- (N-9) ALL FINAL CONNECTIONS TO MECHANICAL EQUIPMENT ARE TO BE IN LIQUID TIGHT FLEXIBLE CONDUIT.
- (N-10) ROUTE ALL CONDUIT SYSTEMS AROUND EXISTING DUCT WORK, BEAMS, NEW DUCT WORK AND PIPING AS REQUIRED TO ACCOMMODATE INSTALLATION. REFER TO MECHANICAL DRAWINGS AND DESIGNER DRAWINGS FOR ADDITIONAL DETAILS.
- (N-11) ALL DEVICES, FIXTURES, FIRE ALARM DEVICES, SYSTEMS, ETC. MUST BE WIRED SUCH THAT ACCESS PANELS ARE NOT REQUIRED IN DRYWALL CEILING AREAS.
- (N-12) USE PVC COATED GALVANIZED RIGID STEEL CONDUIT ROBOY PERMACOTE IN ALL OUTDOOR LOCATIONS AND IN AREAS THAT ARE NOT ENVIRONMENTALLY CONTROLLED.
- (N-13) AS PART OF THE BASE BID PRICE ELECTRICAL CONTRACTOR SHALL PROVIDE (SUPPLY AND INSTALL) AN ADDITIONAL TWO (2) CSA 5-20R DUPLEX RECEPTACLES OVER AND ABOVE THOSE SHOWN ON DRAWING NO. E-2.1 ON AN AD HOC BASIS UP TO SUBSTANTIAL COMPLETION. EACH ADDITIONAL RECEPTACLE SHALL BE ON A DEDICATED CIRCUIT COMPLETE WITH BRANCH WIRING (CONDUIT AND WIRE) AND BREAKER. BREAKER REQUIREMENTS NOT INDICATED ON PANEL SCHEDULES.
- (N-14) PROVIDE RECEPTACLES, CONDUIT, WIRE (200' OF 2#10AWG + G (TOTAL OF 400' WIRE PLUS G AND 200' 3/4" CONDUIT) PER RECEPTACLE), BREAKERS, TERMINATION AT PANEL BREAKER END AND AT DEVICE END, ETC. FOR FULLY FUNCTIONAL LIVE DEVICES. EXACT INSTALLATION LOCATION AND PANEL SOURCE TO BE DETERMINED ON SITE BY CLIENT DURING CONSTRUCTION. PROVIDE UPDATED TYPED PANEL SCHEDULES FOR ALL PANELS AT THE COMPLETION OF THE PROJECT.
- (N-15) ALL DEVICES, FIXTURES, FIRE ALARM DEVICES, SYSTEMS, ETC. MUST BE WIRED SUCH THAT ACCESS PANELS ARE NOT REQUIRED IN DRYWALL CEILING AREAS.
- (N-16) PROVIDE REQUIRED PENETRATIONS THROUGH ROOF/EXTERIOR WALL. COORDINATE WORK AND WEATHERPROOF SEALING REQUIREMENT WITH LANDLORD.
- (N-17) PROVIDE CONTROL WIRING BETWEEN OPERATORS CONTROLLING DOORS IN RESPECTIVE VESTIBULES TO ALLOW FOR OPERATION OF BOTH DOORS WITH ANY ONE (1) WAVE SENSOR. FINAL WIRING REQUIREMENTS TO BE COORDINATED ON SITE WITH ARCHITECT.
- (N-18) ELECTRICAL CONTRACTOR TO ENSURE THAT DEVICES ARE NOT INSTALLED ON WALLS WITH WHITE BOARDS OR ON FEATURE WALLS. CONFIRM ALL WHITE BOARD AND FEATURE WALL LOCATIONS PRIOR TO INSTALLATION.
- (N-19) PROVIDE TWO (2) DUPLEX RECEPTACLES IN CEILING SPACE ON AN AD HOC BASIS FOR CONTROL CONTRACTOR'S USE. UTILIZE COTS #RP-LB-R2/84. COORDINATE LOCATION OF RECEPTACLES ON SITE WITH CONTROLS CONTRACTOR. BID PRICE SHALL INCLUDE FOR 200' OF 2#10AWG + G (TOTAL OF 400' WIRE PLUS G) AND 200' 3/4" CONDUIT PER CONTROL CIRCUIT.
- (N-20) PROVIDE LOCKONS FOR BREAKERS PROTECTING EMERGENCY LIGHTING CIRCUITS.
- (N-21) PROVIDE 120/24V TRANSFORMER FOR EACH WASHROOM APPLIANCE SENSOR (SENSOR PROVIDED BY DIVISION 15).
- (N-22) PROVIDE A CLEAR LEXAN POLYCARBONATE HINGED SHIELD AND FRAME C/W LOCAL AUDIBLE ALARM FOR EACH AND EVERY PULLSTATION PROVIDED AS PART OF THIS SCOPE OF WORK.

① FIRE ALARM SYSTEM BOOSTER PANEL PROVIDED AS PART OF THIS SCOPE OF WORK.



- (N-1) MINIMUM CLEARANCE.
 - (N-2) NEATLY LABEL ALL FLOOR MOUNTED AND WALL DEVICE BOX COVERS WITH CORRESPONDING PANEL NAMES AND CIRCUIT NUMBERS. UTILIZE SELF ADHESIVE MECHANICALLY PRINTED LABELS.
 - (N-3) PROVIDE PUNCH OUTS IN BACKBOX TO ACCOMMODATE CONDUITS INDICATED.
 - (N-4) TERMINATE CONDUIT WITH A 90 DEGREE BEND AND PLASTIC BUSHING IN THE ACCESSIBLE CEILING SPACE.
- UTILITY CCT - WHITE/WHITE (IG) RECEPTACLE

1 TYPICAL WALL MOUNTED DEVICE DETAIL
SCALE: NTS



2 EXPANSION JOINT CROSSING DETAIL
SCALE: NTS

LEGEND

- EXISTING CEILING MOUNTED/SUSPENDED FIXTURE CONNECTED TO UTILITY LIGHTING CIRCUIT.
- CEILING MOUNTED/SUSPENDED FIXTURE. CONNECT TO BASE BUILDING UTILITY LIGHTING CIRCUIT.
- CEILING MOUNTED/SUSPENDED FIXTURE. CONNECT TO NON-SWITCHED 24 HOUR LIGHTING CIRCUIT.
- RECESSED/PENDENT DOWNLIGHT. CONNECT TO SWITCHED BASE BUILDING UTILITY LIGHTING CIRCUIT.
- RECESSED DOWNLIGHT. CONNECT TO NON-SWITCHED 24 HOUR LIGHTING CIRCUIT.
- EMERGENCY BATTERY UNIT, TYPE 'D1', SOURCE 'M1'. BATTERY SHALL BE MOUNTED AT HIGH LEVEL.
- REMOTE EMERGENCY LIGHTING FIXTURE, TYPE 'D2' FED FROM SOURCE 'M2'.
- CEILING OR WALL MOUNTED "EXIT" LIGHT.
- 'TS' DENOTES WALL MOUNTED TIME SWITCH WATT STOPPER TS-400-24 C/W POWER PACK (VOLTAGE RATINGS TO SUIT LIGHTING LOADS) AND BOTH VISUAL AND AUDIBLE WARNING (TIMER PRESET AT 20 MINUTE TIME OUT SETTING).
- 20A/120V DUPLEX RECEPTACLE, CSA 5-20R (T-SLOT). 'IG' DENOTES ISOLATED GROUND. PROVIDE GROUND WIRE BACK TO PANEL.
- 15AMP/120VOLT, U-GROUND DUPLEX RECEPTACLE, TAMPER RESISTANT TYPE, WALL MOUNTED. GFI DENOTES OUTLET C/W GROUND FAULT INTERRUPT PROTECTION.
- DIRECT CONNECTION
- STARTER.
- NON-FUSED HORSEPOWER RATED VISIBLE BLADE HEAVY DUTY DISCONNECT SWITCH C/W PADLOCK PROVISION IN OFF POSITION
- VISIBLE BLADE HEAVY DUTY DISCONNECT SWITCH C/W PADLOCK PROVISION IN OFF POSITION FUSED AT '15A'
- CIRCUIT 'X' FED FROM RECEPTACLE PANEL 'A'. 'D' DENOTES DESIGNATED CIRCUIT FOR ISOLATED GROUND DUPLEX RECEPTACLE.
- E INDICATES EXISTING DEVICE TO REMAIN.
- ER INDICATES EXISTING DEVICE TO BE REMOVED. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
- R DENOTES EXISTING DEVICE IN RELOCATED POSITION. PROVIDE CONDUIT AND WIRE BACK TO SOURCE.
- RE DENOTES EXISTING DEVICE TO REMAIN, RECIRCUIT AS SHOWN. REMOVE EXISTING CONDUIT AND WIRE BACK TO EXISTING SOURCE. PROVIDE NEW CONDUIT AND WIRE BACK TO NEW SOURCE.
- CL DENOTES CEILING MOUNTED
- WG INDICATES DEVICE COMPLETE WITH PROTECTIVE WIRE GUARD
- 4" SQUARE BACKBOX C/W SINGLE DEVICE COVER (PLASTER RING) AND 3/4" EMPTY ZONE CONDUIT ASSEMBLY FOR COMMUNICATIONS CONTRACTOR'S USE. PROVIDE A PULL STRING IN CONDUIT.
- HAWP HANDICAP WAVE SENSOR C/W CONDUIT AND WIRES
- FAS FIRE ALARM SYSTEM HORN. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM
- FASL FIRE ALARM SYSTEM STROBE LIGHT. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- FASLB FIRE ALARM SYSTEM COMBINATION STROBE LIGHT/HORN. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- SD SMOKE DETECTOR. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- MPS MANUAL PULL STATION. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- IDIM INITIATING DEVICE INTERFACE ZONE MODULE. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- EOL END OF LINE RESISTOR. CONNECT TO BASE BUILDING FIRE ALARM SYSTEM.
- DORC DIGITAL ON/OFF/DIMMING ROOM CONTROLLER WATT STOPPER LMRC-212/LMRC-212-347 (VOLTAGE RATING AS REQUIRED TO SUIT LIGHTING LOAD)
- DDLR DIGITAL DIMMING ROOM CONTROLLER WATT STOPPER 120V LINE VOLTAGE LMRC-222.
- NSCC NON-SWITCHED CORRIDOR CEILING MOUNTED OCCUPANCY SENSOR WATT STOPPER LMDC-100. SENSOR PRESET AT 20 MINUTE TIME OUT SETTING C/W AUTO ON AND AUTO OFF WALK THROUGH MODE ON AND DEFAULT SETTING.

1. SUBSTITUTES ARE NOT PERMITTED FOR ALL SPECIFIED PRODUCTS.
2. SHOP DRAWINGS ARE REQUIRED FOR ALL PRODUCTS SPECIFIED FOR THIS PROJECT INCLUDING BUT NOT LIMITED TO LIGHTING CONTROL, TRANSFORMERS, RECEPTACLE PANELS, LIGHTING FIXTURES, EXIT SIGNS, SWITCHES, RECEPTACLES, COVER PLATES AND DIMMERS.
3. ELECTRICAL CONTRACTOR AND ALL SUBCONTRACTORS MUST READ AND COMPLY WITH ELECTRICAL SPECIFICATIONS (ISSUED AS A SEPARATE DOCUMENT).
4. CIRCUITING MUST BE COMPLETED AS SHOWN ON DRAWINGS. DO NOT CHANGE CIRCUIT NUMBERS.
5. INSTALLATION AND MANUFACTURING OF ALL DEVICES AND SERVICES INCLUDING DISTRIBUTION, LIGHT FIXTURES, FEEDERS, BRANCH CIRCUITS, VARIOUS SYSTEMS, ETC. MUST COMPLY WITH ALL LOCAL SEISMIC RESTRAINT REQUIREMENTS.
6. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS, MOUNTING HEIGHTS, CONSTRUCTION DETAILS, LOCATION OF LIGHT FIXTURES, FINISHES AND COLOURS.
7. AS PART OF THIS SCOPE OF WORK AND PRIOR TO CONSTRUCTION, ELECTRICAL CONTRACTOR SHALL COORDINATE AND PAY FOR THE SERVICES OF THE FIRE ALARM MANUFACTURER, FIRE INSPECTOR AND BUILDING INSPECTOR TO THOROUGHLY REVIEW THE PROPOSED INSTALLATION LOCATIONS FOR EACH AND EVERY CONTROL PANEL, REMOTE ANNUNCIATOR PANEL, ANCILLARY DEVICE, FIELD DEVICE, ETC TO ENSURE THAT THE PROPOSED INSTALLATION IS FULLY COMPLIANT WITH CAN/ULC S524-06-AMD1 AND ONTARIO BUILDING CODE. COMPLIANCE SHALL INCLUDE INTERFERENCE AND PROXIMITY TO EXISTING DEVICES AND OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, SUPPLY AIR DUCTS, EXPOSED DUCT WORK, BEAMS, RACEWAYS, ETC), SPACING BETWEEN FIELD DEVICES PROVIDED AS PART OF THIS SCOPE OF WORK IN PROPOSED INSTALLATION LOCATIONS, ETC.
8. AS PART OF THIS SCOPE OF WORK AND PRIOR TO CONSTRUCTION, ELECTRICAL CONTRACTOR SHALL COORDINATE AND PAY FOR THE SERVICES OF THE BUILDING INSPECTOR TO REVIEW THE PROPOSED EXIT SIGN ORIENTATION, LOCATIONS, FACES (READ OR PICTOGRAM) AND CHEVRONS.
9. REFER TO LANDLORD'S MOST CURRENT VERSION OF THE LEASEHOLD IMPROVEMENT MANUAL FOR ADDITIONAL REQUIREMENTS (INCLUDING RISER ACCESS REQUIREMENTS AND REVIEW FEES) OVER AND ABOVE THOSE DETAILED IN THIS DRAWING PACKAGE AND IN THE ELECTRICAL SPECIFICATIONS BOOK. CONTRACTOR SHALL BE RESPONSIBLE FOR AND MUST INCLUDE IN BASE BID PRICE FOR ALL SCOPES OF WORK DETAILED IN THE LANDLORD'S DESIGN CRITERIA MANUAL, ELECTRICAL DRAWINGS AND ELECTRICAL SPECIFICATIONS BOOK.
10. AS PART OF THE BASE BID PRICE ELECTRICAL CONTRACTOR SHALL PROVIDE A FIRE WATCH THROUGHOUT THE DURATION OF THE PROJECT.
11. FIRE ALARM SYSTEM TESTING AND VERIFICATIONS MUST TAKE PLACE BETWEEN 11PM AND 5AM DURING THE WEEK.
12. AS BUILT DRAWING REQUIREMENTS: AS BUILT DRAWINGS TO BE PREPARED AND SUBMITTED IN AUTOCAD FORMAT BY THE ELECTRICAL CONTRACTOR.
 - ALL DEMOLITION SCOPES OF WORK ARE TO BE ERASED FROM AS BUILT DRAWINGS.
 - ROUTING OF ALL FEEDERS, BRANCH WIRING (LIGHTING, EMERGENCY LIGHTING, POWER, ETC), LOW VOLTAGE WIRING, MISCELLANEOUS SYSTEMS WIRING, MISCELLANEOUS CONDUIT SYSTEMS, ETC, TO BE SHOWN ON AS BUILT DRAWINGS. REFER TO DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
13. ALL PANEL SCHEDULE DIRECTORIES MUST BE UPDATED WITH TYPEWRITTEN PANEL SCHEDULES. KROY TAPE MUST BE USED FOR ALL LABELING AT ALL OUTLETS AND LAMACOIDS FOR ENCLOSURES.
14. THE CONTRACTOR MUST ENSURE THAT FIRESTOPPING AND SEALANTS ARE INSTALLED AT NEW FLOOR OPENINGS IN ACCORDANCE WITH THE CURRENT FIRE CODE REQUIREMENTS AND TO PREVENT WATER LEAKAGE TO THE FLOORS BELOW. AREAS PRONE TO WATER LEAKAGE ARE TO BE WATERPROOFED PRIOR TO INSTALLATION OF THE TENANT FLOOR COVERINGS. THE LANDLORD WILL APPROVE THE PROPOSED WATERPROOFING METHOD PRIOR TO THE TENANT PROCEEDING WITH CONSTRUCTION.

DRAWING LIST

- E-1.1 - ELECTRICAL LEGEND AND DETAILS
- E-1.2 - ELECTRICAL DETAILS
- E-1.3 - ELECTRICAL DETAILS
- E-2.0 - ELECTRICAL PLAN BUILDING
- E-2.1 - ELECTRICAL PLAN
- E-3.1 - REFLECTED CEILING PLAN
- E-5.1 - ELECTRICAL DEMOLITION PLAN
- E-6.1 - REFLECTED CEILING DEMOLITION PLAN
- E-7.1 - ELECTRICAL SINGLE LINE DIAGRAM

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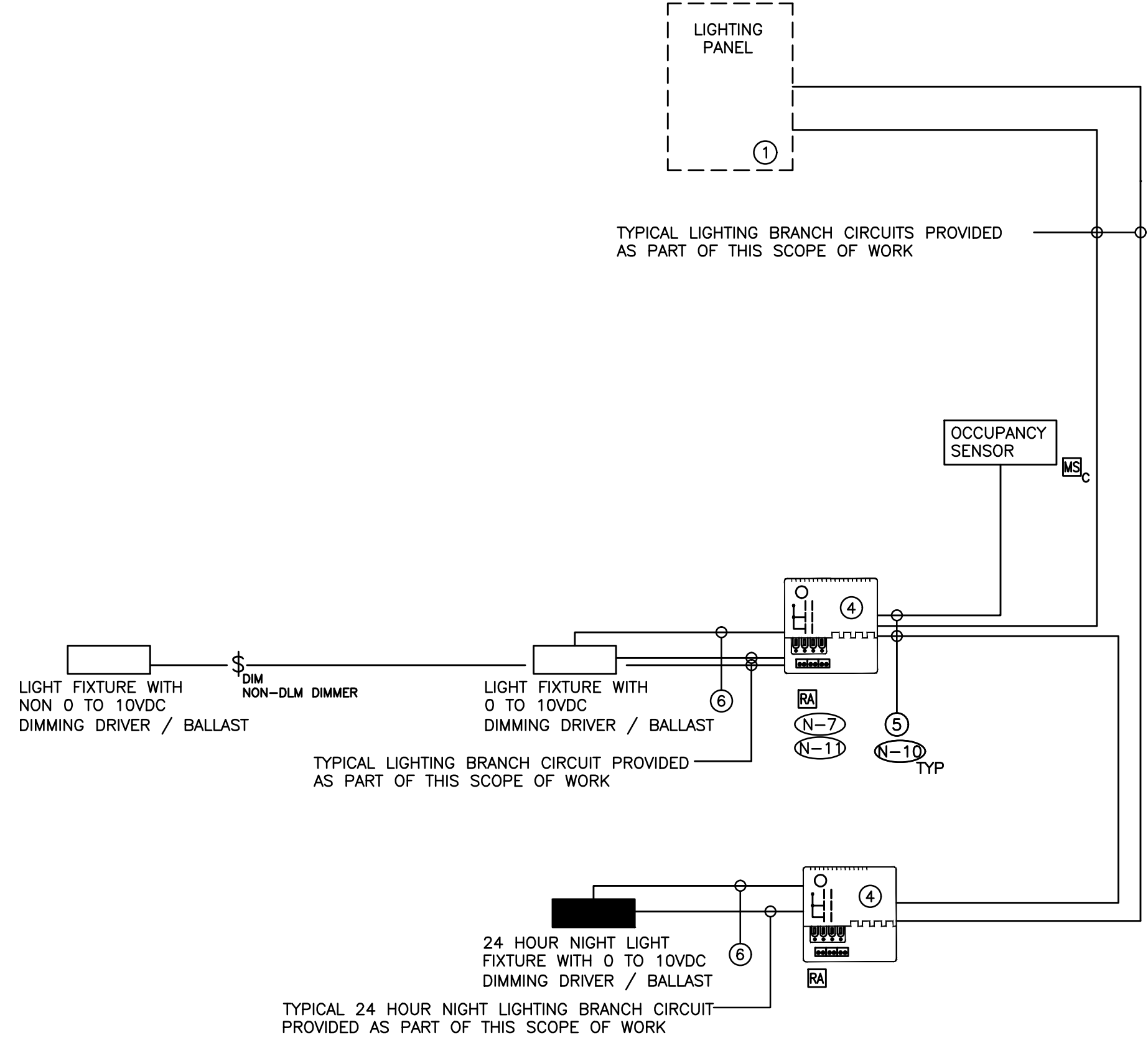
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ELECTRICAL LEGEND AND DETAILS

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E-1.1

Scale AS SHOWN



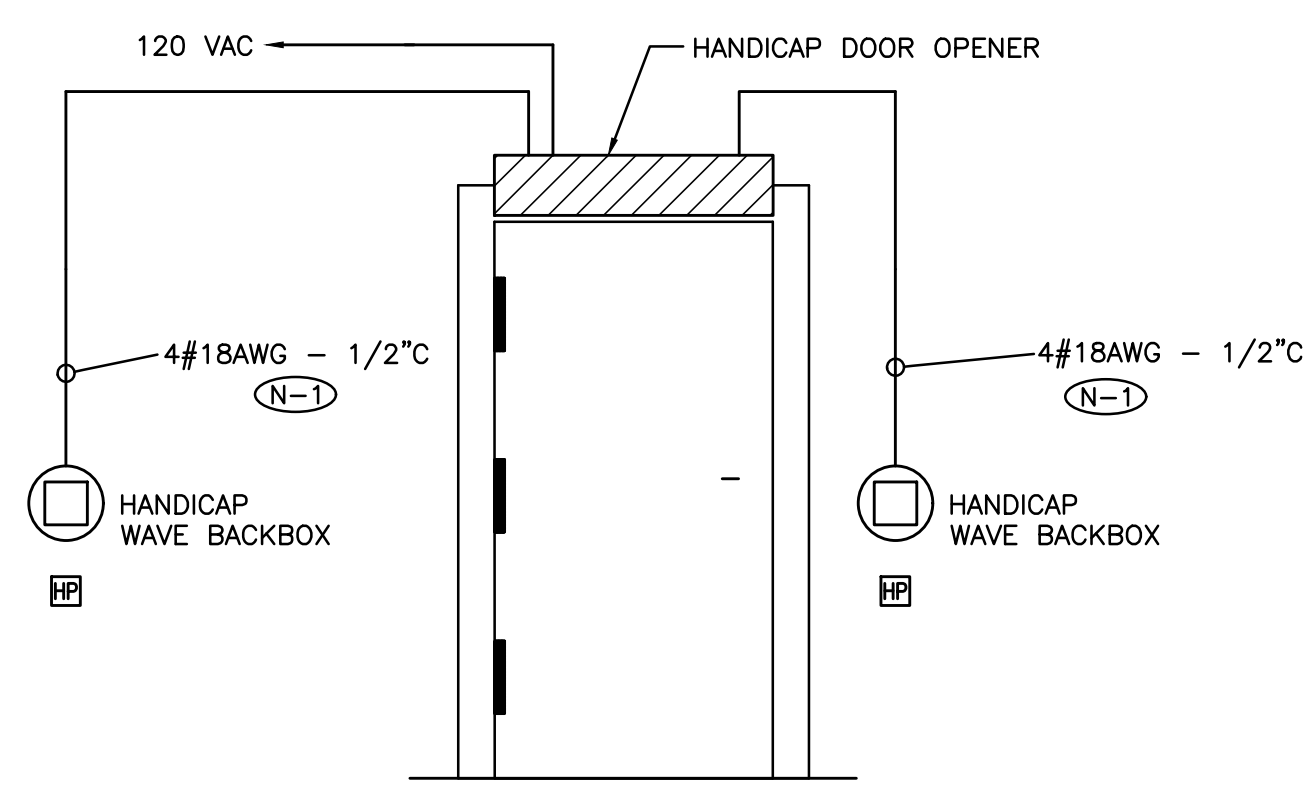
- (N-1) SCHEMATIC IS DIAGRAMMATIC ONLY. REFER TO FLOOR PLANS AND REFLECTED CEILING PLANS FOR DEVICE QUANTITY AND LOCATIONS. PROVIDE QUANTITY OF HARDWARE, ROOM CONTROLLERS, PLUG LOAD CONTROLLERS, SENSORS, DEVICES, CONDUIT, WIRE, CONFIGURATION TOOLS, ETC. TO ENSURE A FULLY OPERATIONAL LOW VOLTAGE LIGHTING CONTROL SYSTEM.
 - (N-2) NOT USED.
 - (N-3) NOT USED.
 - (N-4) ALL LOW VOLTAGE WIRING TO BE INSTALLED IN AN ENCLOSED CONDUIT SYSTEM.
 - (N-5) PROVIDE POWER, CONDUIT, BACKBOX AND WIRING IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. MINIMUM CONDUIT SIZE 3/4".
 - (N-6) PROVIDE DEDICATED CORE DRILLED WALL AND FLOOR PENETRATIONS ON EVERY FLOOR. EXACT LOCATION OF ALL CORE DRILLS TO BE DETERMINED BY X-RAY RESULTS. ALL X-RAYS MUST BE REVIEWED AND APPROVED BY LANDLORD PRIOR TO CORE DRILLING.
 - (N-7) PROVIDE ROOM CONTROLLERS TO ACCOMMODATE ALL LIGHTING ZONES IN CLOSED ROOMS (IE OFFICES, LOUNGES, ETC.) PROVIDED AS PART OF THIS SCOPE OF WORK. MAXIMUM OF TWO (2) SWITCH LEGS PER ROOM CONTROLLER.
 - (N-8) NOT USED.
 - (N-9) NOT USED.
 - (N-10) TERMINATE AND TEST ALL LOW VOLTAGE CONTROL CABLES PROVIDED AS PART OF THIS SCOPE OF WORK. PROVIDE TEST RESULTS FOR ALL LOW VOLTAGE CONTROL CABLES PROVIDED AS PART OF THIS SCOPE OF WORK AT THE END OF CONSTRUCTION. TEST RESULTS SHALL BE INCLUDED AS PART OF THE CLOSE OUT DOCUMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 - (N-11) REFER TO MANUFACTURE'S INSTALLATION GUIDELINES FOR ADDITIONAL INSTALLATION REQUIREMENTS OVER AND ABOVE THOSE DETAILS ON THIS SCHEMATIC.
 - (N-12) ELECTRICAL CONTRACTOR'S BASE BID PRICE SHALL INCLUDE FOUR (4) HOURS OF ON SITE COORDINATION TIME WITH WATTSTOPPER PRIOR TO ORDERING LIGHTING SYSTEM COMPONENTS TO CONFIRM DEVICES AND WIRING REQUIREMENTS. ALL CHANGES TO BE REVIEWED AND APPROVED BY CONSULTANT ON SITE PRIOR TO EXECUTION.
 - (N-13) LIGHT LEVEL OUTPUT (IE, DIMMING LEVEL) FOR EACH AND EVERY FIXTURE PROVIDED AS PART OF THIS SCOPE OF WORK IN ROOMS/AREAS WITH DLM CONTROL TO BE FIELD ADJUSTED ON SITE WITH CLIENT POST OCCUPANCY. TARGET LIGHT LEVELS FOR EACH LOW VOLTAGE LIGHTING ZONE TO BE PROVIDED BY THE CLIENT POST OCCUPANCY. PROCURE (COORDINATE AND PAY FOR) THE SERVICES OF WATTSTOPPER TO ADJUST, PROGRAM AND COMMISSION THE LIGHTING CONTROL SYSTEM.
- AS PART OF THIS SCOPE OF WORK PROCURE THE SERVICES OF A THIRD PARTY PROFESSIONAL ENGINEER TO MEASURE AND RECORD LIGHTING LEVELS IN FOOT CANDLES THROUGHOUT THE ENTIRE SCOPES OF WORK AREAS WITH A CALIBRATED LIGHT METER, AFTER ALL FIELD ADJUSTMENTS HAVE BEEN COMPLETED. READINGS SHALL BE TAKEN BASED ON A MINIMUM OF ONE READING FOR EVERY 20' CENTER IN OPEN OFFICE AREAS AND CORRIDORS / HALLWAYS AND ONE READING IN EACH CLOSED OFFICE, MEETING ROOM, BOARDROOM, ETC. ALL LIGHT LEVEL READINGS ARE TO BE TAKEN DURING NON-DAYLIGHT HOURS. PROVIDE A SEALED REPORT IDENTIFYING LIGHT LEVEL READINGS.

- ① TYPICAL RECEPTACLE / LIGHTING PANEL. REFER TO DRAWING NO. E-7.1 FOR ADDITIONAL REQUIREMENTS
- ② NOT USED.
- ③ NOT USED.
- ④ ON / OFF / DIMMING ROOM CONTROLLER
- ⑤ PLENUM RATED 4 PAIR CAT6 UTP CABLE AS MANUFACTURED BY WATT STOPPER
- ⑥ 0 TO 10VDC CONTROL WIRING PER MANUFACTURER'S RECOMMENDATIONS

INSTALL LOW VOLTAGE CONTROL SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, ASHRAE 90.1 2013, ONTARIO BUILDING CODE, ELECTRICAL SAFETY CODE AND THESE DOCUMENTS.

1 LOW VOLTAGE LIGHTING CONTROL SYSTEM WIRING SCHEMATIC
E-1.2 SCALE: NTS

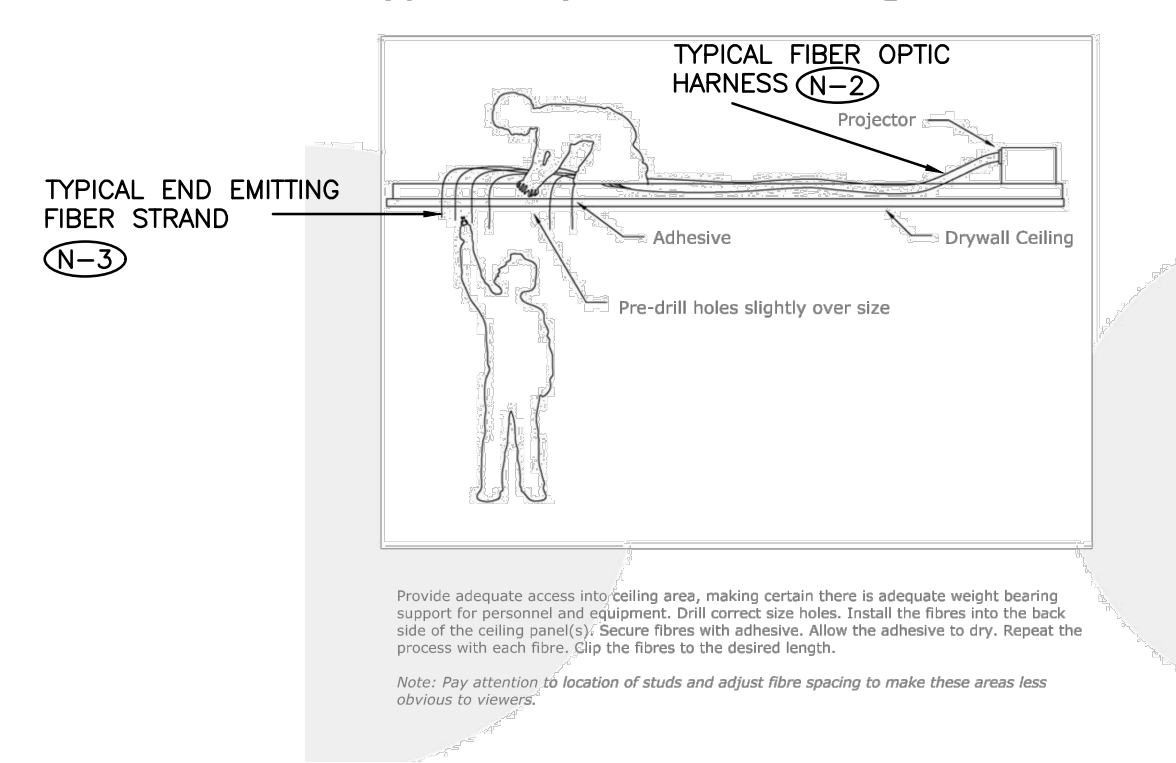
————— DENOTES NEW PROVIDED BY ELECTRICAL CONTRACTOR
 - - - - - DENOTES EXISTING TO REMAIN
 * * * * * DENOTES EXISTING TO BE REMOVED BY ELECTRICAL CONTRACTOR



- (N-1) PROVIDE WIRE, CONDUIT AND BACKBOXES INDICATED.
- (N-2) COORDINATE THE ROUGH-IN REQUIREMENT WITH DOOR MANUFACTURER PRIOR TO CONSTRUCTION.

2 HANDICAP DOOR OPENER SYSTEM DETAIL
E-1.2 SCALE: NTS

Typical Drywall Star Ceiling Installation



- (N-1) DIAGRAM ILLUSTRATES TYPICAL END EMITTING FIBER STRAND INSTALLATION AND IS INCLUDED FOR REFERENCE ONLY. REFER TO REFLECTED CEILING PLANS FOR DEVICE QUANTITY AND LOCATIONS.
- (N-2) NEATLY COIL SLACKS IN CEILING SPACE FOR EACH AND EVERY FIBER OPTIC HARNESS PROVIDED AS PART OF THIS SCOPE OF WORK. DO NOT TRIM HARNESS OR END EMITTING FIBER STRANDS.
- (N-3) EXACT LOCATION TO INSTALL END EMITTING FIBER STRANDS PROVIDED AS PART OF THIS SCOPE OF WORK TO BE COORDINATED ON SITE WITH ARCHITECT.

3 TYPE "F1" TYPICAL END EMITTING FIBER STRAND INSTALLATION DETAIL
E-1.2 SCALE: NTS

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 WASHROOM UPGRADES - CARIBOU CAFE

ELECTRICAL DETAILS

Project number 19064
 Date APRIL, 2019
 Drawn by KZ
 Checked by HDC

E-1.2
 Scale AS SHOWN

CLIENT:



SUB-CONSULTANTS:



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3	ISSUED FOR TENDER REVIEW	30JUL19
4	REISSUED FOR TENDER	01AUG19

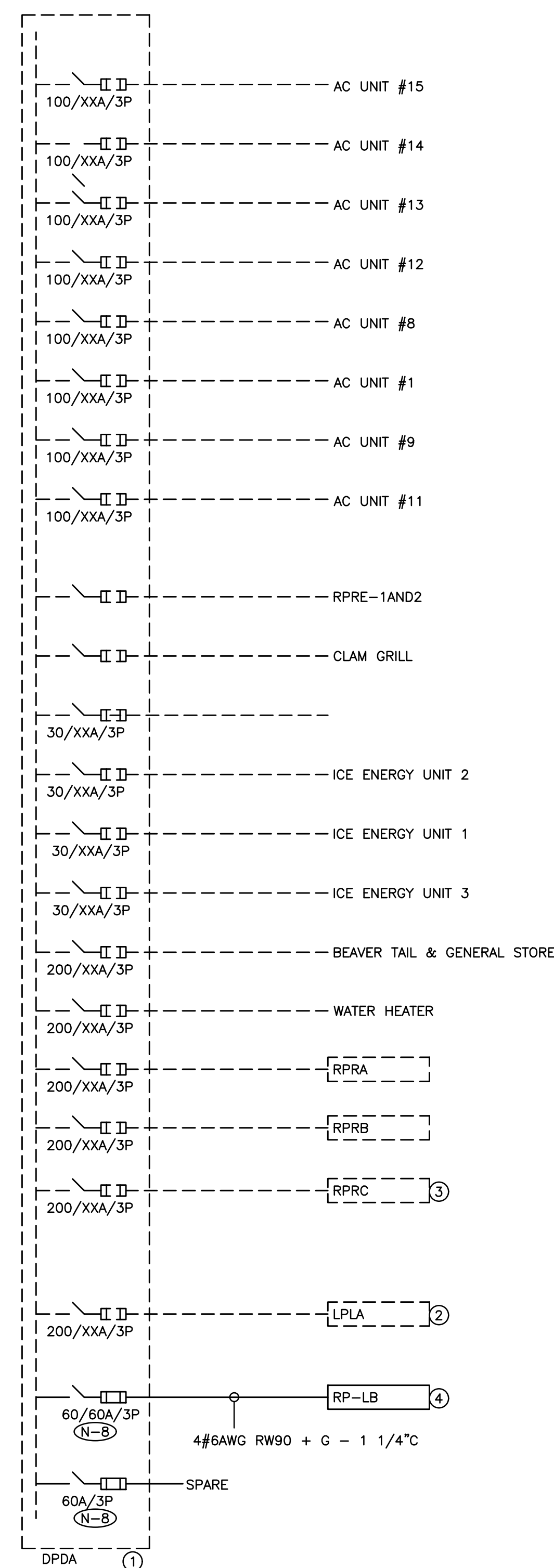
TORONTO ZOO
 361A OLD FINCH AVE
 TORONTO, ONTARIO, M1B 5K7
 WASHROOM UPGRADES - CARIBOU CAFE

ELECTRICAL SINGLE LINE DIAGRAM

Project number	19064
Date	APRIL, 2019
Drawn by	KZ
Checked by	HDC

E-7.1

Scale NTS



- (N-1) RISER IS DIAGRAMMATIC ONLY. REFER TO FLOOR PLANS FOR DEVICE QUANTITY AND LOCATIONS.
- (N-2) PROVIDE FIRE RATED PLYWOOD BACKBOARDS FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT PROVIDED AS PART OF THIS CONTRACT AND FOR ALL PREPURCHASED / PREQUALIFIED DISTRIBUTION. PAINT BACKBOARDS WITH FIRE RETARDANT PAINT (COLOUR AS DIRECTED ON SITE BY PROJECT MANAGER). FIRE RATED STAMP MUST BE ON ALL PIECES PROVIDED AND MUST BE VISIBLE WHEN INSTALLED. DO NOT PAINT OVER STAMP.
- (N-3) ALL INDOOR DISTRIBUTION PROVIDED AS PART OF THIS SCOPE OF WORK MUST BE TYPE 2 ENCLOSURE, UNLESS SPECIFICALLY NOTED OTHERWISE. PROVIDE COMPRESSION FITTINGS FOR SERVICES ENTERING DISTRIBUTION.
- (N-4) PROVIDE DEDICATED CORE DRILLED WALL AND FLOOR PENETRATIONS ON EVERY FLOOR. EXACT LOCATION OF ALL CORE DRILLS TO BE DETERMINED BY X-RAY RESULTS. ALL X-RAYS MUST BE REVIEWED AND APPROVED BY LANDLORD PRIOR TO CORE DRILLING.
- (N-5) PROVIDE TEMPORARY POWER AND LIGHTING THROUGHOUT PROJECT TO ACCOMMODATE REQUIREMENTS OF ALL TRADES. REQUIREMENTS INCLUDE PROVIDING EXTENSION CORDS, EXTENSION LIGHTING AND EQUIPMENT REQUIRED FOR THE WORK OF ALL TRADES. ALL COSTS RELATED TO THIS WORK SHALL BE INCLUDED IN THE BASE BID PRICE.
- (N-6) ROUTE ALL CONDUIT SYSTEMS AROUND EXISTING DUCT WORK, BEAMS, NEW DUCT WORK AND PIPING AS REQUIRED TO ACCOMMODATE CONDUIT SYSTEM INSTALLATION. REFER TO MECHANICAL DRAWINGS AND DESIGNER DRAWINGS FOR ADDITIONAL DETAILS.
- (N-7) ALL BREAKERS REQUIRED TO COMPLETE ALL SCOPES OF WORK TO BE NEW. DO NOT REUSE EXISTING BREAKERS.
- (N-8) PROVIDE NEW DISCONNECT SWITCH UNIT INDICATED. PROVIDE MOUNTING HARDWARE TO ACCOMMODATE EXISTING PANEL BUS. PROVIDE LUGS TO ACCOMMODATE WIRE SIZE INDICATED. PROVIDE THE SERVICES OF THE PANEL MANUFACTURER TO RECERTIFY THE EXISTING PANEL TO CSA STANDARDS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

- ① EXISTING DISTRIBUTION PANEL - 120/208V/3PH/4W/WESTINGHOUSE
- ② EXISTING RECEPTACLE PANEL - 120/208V/3PH/4W/225A MAINS/42CCT/FEDERAL PIONEER
- ③ EXISTING RECEPTACLE PANEL - 120/208V/3PH/4W/225A MAINS/30CCT/FEDERAL PIONEER
- ④ RECEPTACLE PANEL - 120/208V/3PH/4W/60A MCB/COPPER BUS/84CCT 20"W/BASIS OF DESIGN SQ D NQ/100KA RMS SERIES RATED/TYPE 3R ENCLOSURE

ELECTRICAL CONTRACTOR TO PREPARE A PRELIMINARY ZERO FEEDER LENGTH COORDINATION STUDY PRIOR TO ORDERING DISTRIBUTION. SUBMIT TO CONSULTANT FOR REVIEW AND APPROVAL.

Tender Specifications
For
Toronto Zoo
Public Washroom Improvements:
Caribou Café Washrooms

Section Number	Title
	INTRODUCTORY INFORMATION
00 01 10	Table of Contents
	DIVISION 1 – GENERAL REQUIREMENTS
01 11 00	Summary of Work
01 14 00	Work Restrictions
01 21 00	Allowances
01 23 10	Alternatives
01 31 19	Project Meetings
01 32 16.07	Construction Progress Schedule
01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 45 00	Quality Control
01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 73 00	Execution Requirements
01 74 11	Cleaning
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 92 00	Facility Operation Manual
	DIVISION 2 - EXISTING CONDITIONS
02 41 99	Demolition
	DIVISION 4 - MASONRY
04 05 12	Masonry Mortar
04 05 19	Masonry Anchorage and Reinforcing
04 22 00	Concrete Unit Masonry
	DIVISION 8 - OPENINGS
08 11 00	Metal Doors and Frames
08 71 00	Door Hardware
	DIVISION 9 - FINISHES
09 21 16	Gypsum Board Assemblies
09 22 16	Non Structural Metal Framing
09 30 13	Tiling
09 91 23	Interior Painting
	DIVISION 10 - SPECIALTIES
10 28 10	Toilet and Bath Accessories

End of Table of Contents.

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises of the complete renovation male and female washrooms of the Caribou washroom as the Toronto Zoo.

1.2 CONTRACT METHOD

- .1 Construct Work under single contract.
- .2 Relations and responsibilities between Contractor and subcontractors, Design and Design-Builder and suppliers subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:
 - .1 Furnish to Contractor bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Consultant.
 - .2 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.3 WORK BY OTHERS

- .1 No other contractors will be within the area while work under this contract occurs.

1.4 CONTRACTOR USE OF PREMISES

- .1 Unrestricted use of site until Substantial Performance.
- .2 Co-ordinate use of premises under direction of the Owner
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.5 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.6 PRE-ORDERED PRODUCTS

- .1 No pre-purchasing of products is required.

1.7 PRE-PURCHASED EQUIPMENT

- .1 No pre-purchasing of equipment is required.

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants, public and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.9 EXISTING SERVICES

- .1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and tenant operations.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .4 Submit schedule to and obtain approval from Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Provide temporary services when directed by Tenant (Owner)/Landlord to maintain critical building and tenant systems.
- .6 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.

- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1

General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.4 EXISTING SERVICES

- .1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Engineer 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Submit schedule.
- .4 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.
- .6 Ingress and egress of Contractor vehicles at site is limited to.

1.5 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not allowed, only in areas indicated by the Owner.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document
- .2 Project Supplementary Conditions

1.2 CASH ALLOWANCES

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document,
- .2 Include in Contract Price specified cash allowances.
- .3 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
- .4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- .5 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .7 Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
- .8 Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Product Installation Alternatives to Agreement of work.
- .2 Incorporation of accepted Alternatives into Agreement.

1.2 RELATED SECTIONS

- .1 Instructions to Bidders.

1.3 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document

1.4 REQUIREMENTS

- .1 Referenced specification Sections stipulate pertinent requirements for products and methods to achieve the Work stipulated under each Alternative.
- .2 Coordinate affected related Work and modify surrounding Work to integrate the Work under each Alternative.

1.5 AWARD/SELECTION OF ALTERNATIVES

- .1 Indicate variation of Bid Price for Alternatives described below and listed in Bid Form Supplementary Bid Information Form. Note that this form requests a 'difference' in Bid Price by adding to or deducting from the base Bid price.
- .2 Bids shall be evaluated on 'Base Bid' price. After determination of preferred Bidder, consideration will be given to Alternatives and Bid Price adjustments.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Consultant.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Consultant.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance Consultant.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PROGRESS MEETINGS

- .1 During course of Work and weeks prior to project completion, schedule progress meetings monthly.
- .2 Contractor, major Subcontractors involved in Work and Consultant and Owner are to be in attendance.
- .3 Notify parties minimum 5 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
- .5 Agenda to include, but not limited to, the following:
 - .1 Schedules
 - .2 Review, approval of minutes of previous meeting.
 - .3 Review of Work progress since previous meeting.
 - .4 Field observations, problems, conflicts.
 - .5 Problems which impede construction schedule.
 - .6 Review of off-site fabrication delivery schedules.
 - .7 Corrective measures and procedures to regain projected schedule.
 - .8 Revision to construction schedule.

- .9 Progress schedule, during succeeding work period.
- .10 Review submittal schedules: expedite as required.
- .11 Maintenance of quality standards.
- .12 Review proposed changes for affect on construction schedule and on completion date.
- .13 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Project Manager to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Project Manager and Consultant within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Project Manager and Consultant within 5 working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Consultant will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award
 - .2 Shop Drawings, Samples
 - .3 Mobilization
 - .4 Demolition
 - .5 Installation
 - .6 Substantial Completion
 - .7 Deficiency Completion
 - .8 Close outs and Record Drawings
 - .9 Final Completion

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on a bi-weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units or in imperial units.
- .4 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent work are co-ordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .9 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document
- .2 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .3 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.

- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .4 After Consultant's review, distribute copies.
- .5 Submit, electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .6 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- .7 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .8 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .9 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .10 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .11 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .12 Delete information not applicable to project.
- .13 Supplement standard information to provide details applicable to project.

- .14 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, transparency copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 SAMPLES

- .1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid Consultant's business address and the project address.
- .3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which Consultant may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic and hard copy of grey tone colour digital photography in jpg format, standard resolution monthly with progress statement and as directed by Consultant.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 2 locations.
 - .1 Viewpoints and their location as determined by Consultant.
- .4 Frequency of photographic documentation: monthly as directed by Consultant.
 - .1 Upon completion of: framing and services before concealment, of Work, and as directed by Consultant.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3	Execution
3.1	NOT USED
.1	Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Ontario
 - .1 Occupational Health and Safety Act, R.S.O. Latest Edition.

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit two copies of Contractor's authorized representative's work site health and safety inspection reports to Project Manager.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .7 Project Manager will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Project Manager within 5 days after receipt of comments from Project Manager.
- .8 Project Manager review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Project Manager.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Project Manager prior to commencement of Work.

1.6 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Project Manager may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.7 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Health and Safety Act, R.S.O.
- .2 Comply with Occupational Health and Safety Regulations, Latest Edition.
- .3 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C.
- .4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.9 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Project Manager verbally and in writing.

1.10 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with the Project Manager.

1.11 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Project Manager.
- .2 Provide Project Manager with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Project Manager may stop Work if non-compliance of health and safety regulations is not corrected.

1.12 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with Ontario Building Code of Canada (OBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Project Manager.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Project Manager.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Project Manager

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document

1.2 INSPECTION

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document
- .2 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
- .4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .5 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Consultant shall pay cost of examination and replacement.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document

- .2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant.

1.6 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document
- .2 Within text of each specifications section, reference may be made to reference standards. List of standards reference writing organizations is contained in Section.
- .3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .4 If there is question as to whether products or systems are in conformance with applicable standards, Contractor reserves right to have such products or systems tested to prove or disprove conformance.
- .5 Cost for such testing will be born by Contractor in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document
- .2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .4 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Contractor based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .7 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Contractor of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Contractor at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Contractor reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Contractor.
- .9 Touch-up damaged factory finished surfaces to Contractor's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Contractor. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

- .2 Notify Contractor in writing, of conflicts between specifications and manufacturer's instructions, so that Contractor will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Contractor to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contractor if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Contractor reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contractor, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Contractor if there is interference. Install as directed by Contractor.

1.10 REMEDIAL WORK

- .1 Refer to Toronto Zoo RFT 45 (2019-08) bid document
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Contractor of conflicting installation. Install as directed.

1.12 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Contractor.

1.15 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document

1.2 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
- .2 Cap or otherwise seal lines at cut-off points as directed by Consultant.

1.3 LOCATION OF EQUIPMENT AND FIXTURES

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

1.4 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Record locations of maintained, re-routed and abandoned service lines.

1.5 SUBMITTALS

- .1 Submit name and address of Surveyor to Consultant.
- .2 On request of Consultant, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.6 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

- .2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .10 Restore work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution not Used

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris at designated dumping areas on Crown property
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 Toronto Zoo RFT 45 (2019-08) bid document
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .4 Prior to final review remove surplus products, tools, construction machinery and equipment.

- .5 Remove waste products and debris, including that caused by Owner or other Contractors.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors and.
- .10 Clean lighting reflectors, lenses, and other lighting surfaces.
- .11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Toronto Zoo RFT 45 (2019-08) bid document
- .2 Canadian Environmental Protection Act (CEPA)
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Consultant's inspection.
 - .2 Consultant's Inspection:
 - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Certificates required by Utility companies: submitted.
 - .5 Operation of systems: demonstrated to Owner's personnel.
 - .6 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor Design-Builder.
 - .2 When Work incomplete according to Consultant, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .7 Final Payment:
 - .1 Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Owner three final copies of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.2 FORMAT

- .1 Close Out Manuals to be formatted as per Section 01 92 00

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Close Out Manuals to contain contents as per Section 01 92 00

1.4 RECORD DRAWING DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Consultant one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Consultant.

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of drawings, and in copy of Project Manual, provided by Consultant.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: 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.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.6 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

- .1 Include regulation, control, stopping, shut-down, and emergency instructions.
- .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .15 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.8 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.

- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Consultant.

1.10 WARRANTIES AND BONDS

- .1 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.
- .2 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .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 completion of applicable item of work.
- .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 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .4 Conduct joint 12 month warranty inspection, measured from time of acceptance, by Consultant.
- .5 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .6 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Consultant to proceed with action against Contractor.

1.11 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

1.12 OPERATION AND MAINTENANCE MANUALS

- .1 The contractor shall provide three (3) copies of the Operation and Maintenance Manuals as per section 01 92 00

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 This section is limited to portions of the Operations and Maintenance Manual (O&M) provided to Consultant, Project Manger, Facility Manger and Cx Manager by the contractor.

.2 Acronyms:

.1 BMM - Building Management Manual.

.2 Cx - Commissioning.

.3 HVAC - Heating, Ventilation and Air Conditioning.

.4 PI - Product Information.

.5 PV - Performance Verification.

.6 TAB - Testing, Adjusting and Balancing.

.7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

.1 Standard letter size paper 8.5 x 11 inches

.2 Methodology used to facilitate updating.

.3 Drawings, diagrams and schematics to be professionally developed.

.4 Electronic copy of data to be in a format accepted and approved by Project Manager and Facility Manager

.5 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Cx Manager

1.3 GENERAL INFORMATION

.1 Provide to consultant and Cx Manager for review the O & M Manual as per the following Checklist

Initial Review of O&M manuals must take place 2 weeks prior to Substantial Completion or training

Items:	Required		Provided	
	Yes	No	Yes	No
Assembled in 1" or greater, 3 ring binders and one electronic copy provided on Memory Stick (or appropriate electronic media).	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Binder Cover and Binder Edge and Title Page: Project Name, Building Name, address, project number (GOC#), Project Completion Date.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Table of Contents: Project Name, Building Name, address, project number (GOC#), Project Completion Date and table of contents.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab A - Contact information: Include contact information for Consultant, General Contractor and all Sub-Contractors. Contractor Information: name, address, telephone number of manufacturer, installing contractor, 24-hour number for emergency service for all equipment in this section identified by equipment.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab B - Signed letter of Warranty: Signed and dated letter of Warranty to include: project name, project number (GOC#), location, warranty start date (to be the date of Substantial Completion as declared by Consultant), and all manufacturer and extended warranties.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab C- Shop Drawings: A copy of all Shop Drawings reviewed by the Consultant and or Third Party Commissioning Agent.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab D - All Reports: Copies of all TAB reports, pre-functional tests, start up reports, completed performance verification forms and permits or certifications from Authorities Having Jurisdictions.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab E – Sequences of Operation: Provide Designers and / or the Manufactures operating instructions and sequence of operations.	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Tab F - Maintenance and Service Procedures: Specific service and maintenance manuals, preventative and corrective maintenance, with service procedures and schedules.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab G - As Build Drawings: Marked in red ink, by the Contractor and reviewed by the Consultant.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tab H – CMMS Data Sheets: A copy of all completed CMMS Data Sheets for all equipment which was deleted, removed, added or replaced.	Yes	No	Yes	No
	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Tab I – Letter, signed by the Consultant or Commissioning Provider Indicating whether the Project included a system or modification to system susceptible to Legionella and whether the Facility Legionella Binder as per MD-15161 was updated in particular the Facility Checklist LBCMP-1, Contact List LBCMP-2 and Schematic Drawings, and whether the update was completed.	Yes	No	Yes	No
	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Tab J - Site Inspection Reports	Yes	No	Yes	No
	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tab K- A final Commissioning Report	Yes	No	Yes	No
	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Last Tab-Misc items as listed: 1. Disposal Records, MSDS,	Yes	No	Yes	No
	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

- .1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures 01 00 10 - General Instructions.
- .2 Before proceeding with demolition of load bearing walls or of other walls and where required by authority having jurisdiction submit for review by Consultant shoring and underpinning drawings prepared by qualified professional engineer registered or licensed in the Province of Ontario, showing proposed method.

1.3 SITE CONDITIONS

- .1 Review "Designated Substance Report" and take precautions to protect environment.
- .2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
 - .1 Do not proceed until written instructions have been received from Consultant.
- .3 Notify Consultant before disrupting building access or services.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 PREPARATION

- .1 Inspect site and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements

of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

- .1 Immediately notify Consultant and utility company concerned in case of damage to any utility or service, designated to remain in place.
- .2 Immediately notify the Engineer should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PROTECTION

- .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
- .2 Keep noise, dust, and inconvenience to occupants to minimum.
- .3 Protect building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .5 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.

3.3 SALVAGE

- .1 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .2 Remove items to be reused, store as directed by Consultant, and re-install under appropriate section of specification.

3.4 SITE REMOVALS

- .1 Remove items as indicated.

3.5 DEMOLITION

- .1 Remove parts of existing building to permit new construction. Sort materials into appropriate piles for reuse and recycling.
- .2 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.

3.6 DISPOSAL

- .1 Dispose of removed materials, to appropriate recycling facilities ~~reuse facilities~~ except where specified otherwise, in accordance with authority having jurisdiction.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2-Latest Edition, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA A179- Latest Edition, Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA A371- Latest Edition, Masonry Construction for Buildings.
 - .4 CAN/CSA-A3000- Latest Edition, Cementitious Materials Compendium;
CAN/CSA-A3002- Latest Edition, Masonry and Mortar Cement.
- .2 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1168- Latest Edition, Adhesives and Sealants Applications.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
 - .2 Provide manufacturer's printed product literature, specifications and datasheets. Include product characteristics, performance criteria, and limitations.
 - .3 Provide electronic copies of Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS)
- .2 Manufacturer's Instructions:
 - .1 Provide manufacturer's installation instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handles masonry mortar and grout materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
 - .1 Deliver prepackaged, dry-blended mortar mix to project site in labelled plastic-lined bags each bearing name and address of manufacturer, production codes or batch numbers, and colour or formula numbers.
 - .2 Maintain mortar, grout and packaged materials clean, dry, and protected against dampness, freezing, traffic and contamination by foreign materials.

1.4 SITE CONDITIONS

- .1 Ambient Conditions: maintain materials and surrounding air temperature to:
 - .1 Minimum 5 degrees C prior to, during, and 48 hours after completion of masonry work.
 - .2 Maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.
- .2 Weather Requirements: CAN/CSA A371

Part 2 Products

2.1 MATERIALS

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Cement:
 - .1 Portland Cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10) gray colour.
 - .1 Use low VOC products in compliance with SCAQMD Rule 1168.
 - .2 Masonry Cement: to CAN/CSA-A3002 and CAN/CSA A179, Type N
 - .3 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA A179, Type N
 - .1 Use low VOC products [in compliance with SCAQMD Rule 1168.
 - .4 Packaged Dry Combined Materials for mortar: to CAN/CSA A179, Type N, using gray colour cement.
- .3 Aggregate: supplied by one supplier.
 - .1 Fine Aggregate: to CAN/CSA A179, manufactured sand.
 - .2 Course Aggregate: to CAN/CSA A179
- .4 Water: clean and potable.
- .5 Bonding Agent: latex type.
- .6 Polymer Latex: organic polymer latex admixture of butadiene-styrene type non-emulsifiable bonding admixture.

2.2 MORTAR MIXES

- .1 Mortar for interior masonry:
 - .1 Loadbearing: type S based on proportion specifications.
 - .2 Non-Loadbearing: N based on proportion specifications.

2.3 MORTAR MIXING

- .1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.
- .2 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.
- .3 Maintain sand uniformly damp immediately before mixing process.
- .4 Do not use anti-freeze compounds including calcium chloride or chloride based compounds.
- .5 Do not add air entraining admixture to mortar mix.
- .6 Use a batch type mixer in accordance with CAN/CSA A179.

- .7 Pointing mortar: prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour no more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- .8 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
- .9 Use mortar within 2 hours after mixing at temperatures of 32 degrees C, or 2-1/2 hours at temperatures under 5 degrees C.

2.4 MIX TESTS

- .1 Testing Mortar Mix:
 - .1 Test mortar to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA A179, for mortar based on proportion specification. Test during construction for:
 - .1 Compressive strength.
 - .2 Consistency.
 - .3 Mortar aggregate ratio.
 - .4 Sand/cement ratio.
 - .5 Water content and water/cement ratio.
 - .6 Air content.
 - .7 Splitting tensile strength.

Part 3 Execution

3.1 EXAMINATION

- .1 Request inspection of spaces to be grouted.

3.2 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.3 CONSTRUCTION

- .1 Do masonry mortar and grout work in accordance with CAN/CSA A179 except where specified otherwise.

3.4 MIXING

- .1 All pointing mortar can be mixed using a regular paddle mixer. Only electric motor mixers are permissible. Mixers run on hydrocarbons are not permitted, due to fumes.
- .2 Clean all mixing boards and mechanical mixing machine between batches.
- .3 Mortar must be weaker than the units it is binding.

- .4 Contractor to appoint one individual to mix mortar, for duration of project. In the event that this individual must be changed, mortar mixing must cease until the new individual is trained, and mortar mix is tested.

3.5 MORTAR PLACEMENT

- .1 Install mortar to manufacturer's instructions.
- .2 Install mortar to requirements of CAN/CSA A179.
- .3 Remove excess mortar from grout spaces.

3.6 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .2 Remove droppings and splashings using clean sponge and water.
- .3 Clean masonry with low pressure clean water and soft natural bristle brush.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM A36/A36M-Latest Edition, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A82/A82M- Latest Edition, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - .3 ASTM A167- Latest Edition, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A307- Latest Edition, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - .5 ASTM A580/A580M- Latest Edition, Standard Specification for Stainless Steel Wire.
 - .6 ASTM A641/A641M- Latest Edition, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - .7 ASTM-A666- Latest Edition, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2- Latest Edition, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA A179- Latest Edition, Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA A370- Latest Edition, Connectors for Masonry.
 - .4 CAN/CSA A371- Latest Edition, Masonry Construction for Buildings.
 - .5 CAN/CSA G30.18- Latest Edition, Billet-Steel Bars for Concrete Reinforcement.
 - .6 CSA-S304.1- Latest Edition, Design of Masonry Structures.
 - .7 CSA W186- Latest Edition, Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's Instructions:
 - .1 Provide manufacturer's installation instructions.

1.3 FIELD MEASUREMENTS

- .1 Make field measurements necessary to ensure proper fit of members.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle masonry anchorage and reinforcing materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:

- .1 Deliver reinforcement and connectors, identified in shop and placement drawings.

Part 2 Products

2.1 MATERIALS

- .1 Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G30.18.
- .2 Connectors: to CAN/CSA A370 and CSA-S304.1.
- .3 Corrosion protection: to CSA-S304.1, galvanized to CSA-S304.1 and CAN/CSA A370.
- .4 Fasteners: installed post-construction:
 - .1 Bolts and Screws: size and type to suit application, locate where indicated.
 - .2 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.
 - .3 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.
- .5 Ties: hot dip galvanized to CAN/CSA A370 Table 5.2 steel finish.
 - .1 Corrugated to CAN/CSA A370.
 - .2 Unit ties, to CAN/CSA A370: rectangular, fabricated from cold-drawn steel, size to suit application.
 - .3 Adjustable Unit Ties: to CAN/CSA A370: proprietary type ties, type, style and size to suit application in accordance with manufacturer's recommendations.
- .6 Anchors: to CAN/CSA A370:
 - .1 Anchor Bolts: conventional (unpatented) anchors, steel, uncoated finish.
- .7 Conventional Bolts:
 - .1 Bolts: to ASTM A36, bar stock shop threaded, straight bolts with square or hex-headed nuts.
 - .2 Plate anchors: steel to ASTM A36, weld square of circular steel plate perpendicular to axis of steel bar threaded on opposite end.
 - .3 Through bolt rods: to ASTM A307 threaded rod or threaded ASTM A36 bar stock.
- .8 Adhesive Anchors: proprietary systems, measure and mix system where epoxy materials are hand-measured and mixed in accordance with manufacturers' written instructions

2.2 FABRICATION

- .1 Fabricate reinforcing in accordance with CAN/CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Fabricate connectors in accordance with CAN/CSA A370.
- .3 Obtain Consultant's approval for locations of reinforcement splices other than shown on placing drawings.

- .4 Upon approval of [Consultant, weld reinforcement in accordance with CSA W186.
- .5 Ship reinforcement and connectors, clearly identified in accordance with drawings.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

- .1 Direct and coordinate placement of metal anchors for masonry supplied to other Sections.

3.3 INSTALLATION

- .1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA A370, CAN/CSA A371, CAN/CSA-A23.1 and CSA-S304.1 unless indicated otherwise.
- .2 Supply and install additional reinforcement to masonry as indicated.

3.4 ANCHORS

- .1 Supply and install metal anchors in accordance with CAN/CSA A370 and CAN/CSA A371.

3.5 LATERAL SUPPORT AND ANCHORAGE

- .1 Supply and install lateral support and anchorage in accordance with CSA-S304.1 and as indicated.

3.6 MOVEMENT JOINTS

- .1 Reinforcement will not be continuous across movement joints unless otherwise indicated.

3.7 FIELD BENDING

- .1 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .2 Replace bars and connectors which develop cracks or splits.

3.8 FIELD TOUCH-UP

- .1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

3.9 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM E336-Latest Edition, Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A165 Series- Latest Edition, CSA Standards on Concrete Masonry Units [covers: A165.1, A165.2, A165.3.
 - .2 CAN/CSA A371- Latest Edition, Masonry Construction for Buildings.
 - .3 CSA S304.1- Latest Edition, Design of Masonry Structures.
- .3 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1168- Latest Edition, Adhesives and Sealants Applications.
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101- Latest Edition, Standard Methods of Fire Endurance Tests of Building Construction and Materials.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Product Data: provide product data, including manufacturer's printed data sheets and catalog pages illustrating products to be incorporated into project for specified products.

Part 2 Products

2.1 MATERIALS

- .1 Standard concrete block units Type Hollow Concrete: to CAN/CSA-A165 Series (CAN/CSA-A165.1) .
 - .1 Classification: H/15/D/O.
 - .2 Dimensions - Nominal: various depending on wall thickness. Refer to drawings.
 - .3 Special shapes: provide bull-nosed units for exposed corners. Provide purpose-made shapes for lintels, beams and bond beams. Provide additional special shapes as indicated.
 - .4 Colour:
 - .1 Integrally coloured pre-finished architectural concrete block with one or more faces ground to expose variegated colours of natural aggregates; with factory-applied clear satin gloss acrylic finish.

- .2 Unit faces filled with cementitious grout, polished with factory applied clear satin gloss acrylic finish.

2.2 REINFORCEMENT

- .1 Reinforcement in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing .

2.3 CONNECTORS

- .1 Connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

2.4 MORTAR MIXES

- .1 Mortar and mortar mixes in accordance with Section 04 05 12 - Masonry Mortar and Grout.

2.5 CLEANING COMPOUNDS

- .1 Use low VOC products in compliance with SCAQMD Rule 1168.
- .2 Compatible with substrate and acceptable to masonry manufacturer for use on products.
- .3 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

2.6 TOLERANCES

- .1 Tolerances for standard concrete unit masonry tolerances in accordance with CAN/CSA A165.1, supplemented as follows:
 - .1 Maximum variation between units within specific job lot not to exceed 2 mm.
 - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
 - .3 Out of square tolerance not to exceed 2 mm.
- .2 Tolerances for architectural concrete masonry units in accordance with CAN/CSA A165.1, supplemented as follows:
 - .1 Maximum variation in length or height between units within specific job lot for specified dimension not to exceed 2 mm.
 - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
 - .3 Out of square tolerance not to exceed 2 mm.
 - .4 Maximum variation in width between units within specific job lot for specified dimension not to exceed 2 mm.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify surfaces and conditions are ready to accept work of this Section.
- .2 Commencing installation means acceptance of existing substrates.

3.2 PREPARATION

- .1 Protect adjacent finished materials from damage due to masonry work.

3.3 INSTALLATION

- .1 Concrete block units:
 - .1 Bond: running.
 - .2 Coursing height: 200 mm for one block and one joint.
 - .3 Jointing: concave where exposed or where paint or other finish coating is specified.
- .2 Special Shapes:
 - .1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.
 - .2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
 - .3 End bearing: not less than 200 mm.
 - .4 Install special site cut shaped units.

3.4 REINFORCEMENT

- .1 Install reinforcing in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.5 CONNECTORS

- .1 Install connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.6 MORTAR PLACEMENT

- .1 Place mortar in accordance with Section 04 05 12 - Masonry Mortar.

3.7 CONSTRUCTION

- .1 Cull out masonry units, in accordance with CAN/CSA A165 and approved range of colour samples, with chips, cracks, broken corners, excessive colour and texture variation.
- .2 Build in miscellaneous items such as bearing plates, steel angles, bolts, anchors, inserts, sleeves and conduits.

- .3 Construct masonry walls using running bond unless otherwise noted.
- .4 Build around frames previously set and braced. Fill behind hollow frames within masonry walls with mortar or grout and embed anchors.
- .5 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.
- .6 Install movement joints and keep free of mortar where indicated.
- .7 Hollow Units: spread mortar setting bed from outside edge of face shells. Gauge amount of mortar on top and end of unit to create full joints, equivalent to shell thickness. Avoid excess mortar.
- .8 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.
- .9 Ensure compacted head joints. Use full or face-shell joint as indicated.
- .10 Tamp units firmly into place.
- .11 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.
- .12 Tool exposed joints concave, weathered/raked for interior work; strike concealed joints flush.
- .13 After mortar has achieved initial set up, tool joints.
- .14 Do not interrupt bond below or above openings.

3.8 REPAIR/RESTORATION

- .1 Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.

3.9 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning, supplemented as follows.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A653/A653M-Latest Edition, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM B29- Latest Edition, Standard Specification for Refined Lead.
 - .3 ASTM B749- Latest Edition, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181- Latest Edition, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CGSB 41-GP-19Ma- Latest Edition, Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-G40.20- Latest Edition /G40.21- Latest Edition, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-[03], Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, Latest Edition.
 - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, Latest Edition.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80- Latest Edition, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252- Latest Edition, Standard Methods of Fire Tests of Door Assemblies.
- .6 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113- Latest Edition, Architectural Coatings.
 - .2 SCAQMD Rule 1168- Latest Edition, Adhesives and Sealants Applications.
- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701- Latest Edition, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S702- Latest Edition, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
 - .3 CAN/ULC-S704- Latest Edition, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .4 CAN4-S104- Latest Edition, Standard Method for Fire Tests of Door Assemblies.
 - .5 CAN4-S105- Latest Edition, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SYSTEM DESCRIPTION

- .1 Design Requirements:
 - .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
 - .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
 - .3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 for ratings specified or indicated.
 - .4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware, fire rating and finishes.
 - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing and fire rating finishes.
 - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

Part 2 Products

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.
- .3 Cast or rolled pure sheet lead: to [ASTM B29] [ASTM B749], weight: [9.8][14.6] [19.5] kg/m², thickness [0.8] [1.2] [1.6] mm.

2.2 DOOR CORE MATERIALS

- .1 Stiffened: face sheets welded, insulated core.
- .2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

- .1 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.
 - .1 Maximum VOC limit 50 g/L to GC-03.

2.5 PAINT

- .1 Shop paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior and interior top and bottom caps: steel.
- .3 Metallic paste filler: to manufacturer's standard.
- .4 Fire labels: metal rivited.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 16 gauge welded type construction.
- .4 Interior frames: 16 gauge welded type construction.
- .5 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .7 Manufacturer's nameplates on frames and screens are not permitted.

- .8 Conceal fastenings except where exposed fastenings are indicated.
- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .10 Insulate exterior frame components with polyurethane insulation.

2.8 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
- .2 Exterior doors: honeycomb construction. Interior doors: honeycomb construction.
- .3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.

- .5 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .7 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
- .10 Manufacturer's nameplates on doors are not permitted.

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

- .1 Form face sheets for exterior doors from 16 gauge sheet steel with polystyrene core laminated under pressure to face sheets.
- .2 Form face sheets for interior doors from 16 gauge sheet steel with polystyrene core laminated under pressure to face sheets.

2.12 THERMALLY BROKEN DOORS AND FRAMES

- .1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.
- .2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break.
- .4 Apply insulation.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

3.4 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.
- .4 Install louvres, if requested.

3.5 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
 - .1 ANSI/BHMA A156.1-Latest Edition, American National Standard for Butts and Hinges.
 - .2 ANSI/BHMA A156.2- Latest Edition, Bored and Preassembled Locks and Latches.
 - .3 ANSI/BHMA A156.3- Latest Edition, Exit Devices.
 - .4 ANSI/BHMA A156.4- Latest Edition, Door Controls - Closers.
 - .5 ANSI/BHMA A156.5- Latest Edition, Auxiliary Locks and Associated Products.
 - .6 ANSI/BHMA A156.6- Latest Edition, Architectural Door Trim.
 - .7 ANSI/BHMA A156.8- Latest Edition, Door Controls - Overhead Stops and Holders.
 - .8 ANSI/BHMA A156.10- Latest Edition, Power Operated Pedestrian Doors.
 - .9 ANSI/BHMA A156.12- Latest Edition, Interconnected Locks and Latches.
 - .10 ANSI/BHMA A156.18- Latest Edition, Materials and Finishes.
 - .11 ANSI/BHMA A156.19- Latest Edition, Power Assist and Low Energy Power - Operated Doors.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA)
 - .1 CSDFMA Recommended Dimensional Standards for Commercial Steel Doors and Frames – Latest Edition

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for [door hardware] and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Hardware List:
 - .1 Submit contract hardware list.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .4 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.4 MAINTENANCE MATERIALS SUBMITTALS

- .1 Extra Stock Materials:
 - .1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Tools:
 - .1 Supply 2 sets of wrenches for door closers, locksets and fire exit hardware.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors and in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect door hardware from nicks, scratches, and blemishes.
 - .3 Protect prefinished surfaces with wrapping.
 - .4 Replace defective or damaged materials with new.

Part 2 Products

2.1 HARDWARE ITEMS

- .1 Refer to Schedule Drawings for additional information.

2.2 DOOR HARDWARE

- .1 Refer to Schedule Drawings for additional information.

2.3 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Use fasteners compatible with material through which they pass.

2.4 KEYING

- .1 Doors, padlocks and cabinet locks to be keyed as per owner requirements. Confirm with owner.
- .2 Supply keys for every lock in this Contract.
- .3 Supply 3 master keys for each master key or grand master key group.
- .4 Stamp keying code numbers on keys and cylinders.
- .5 Supply construction cores.
- .6 Hand over permanent cores and keys to Owner.

Part 3 Execution

3.1 INSTALLATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.
- .4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .5 Where door stop contacts door pulls, mount stop to strike bottom of pull.

- .6 Install key control cabinet.
- .7 Use only manufacturer's supplied fasteners.
 - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .8 Remove construction cores when directed by Consultant.
 - .1 Install permanent cores and ensure locks operate correctly.

3.2 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
 - .3 Remove protective material from hardware items where present.
 - .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 DEMONSTRATION

- .1 Keying System Setup and Cabinet:
 - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
 - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
- .2 Maintenance Staff Briefing:
 - .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
 - .3 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.
- .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by door hardware installation.

END OF SECTION

1.1 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF 45-Latest Edition, Designation System for Aluminum Finishes.
- .2 ASTM International
 - .1 ASTM C475- Latest Edition, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C514- Latest Edition, Standard Specification for Nails for the Application of Gypsum Board.
 - .3 ASTM C557- Latest Edition, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - .4 ASTM C840- Latest Edition, Standard Specification for Application and Finishing of Gypsum Board.
 - .5 ASTM C954- Latest Edition, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 - .6 ASTM C1002- Latest Edition, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .7 ASTM C1047- Latest Edition, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .8 ASTM C1280- Latest Edition, Standard Specification for Application of Gypsum Sheathing.
 - .9 ASTM C1177/C1177M- Latest Edition, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .10 ASTM C1178/C1178M- Latest Edition, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
 - .11 ASTM C1396/C1396M- Latest Edition, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
 - .1 AWCI Levels of Gypsum Board Finish- Latest Edition.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34- Latest Edition, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-71.25- Latest Edition, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113- Latest Edition, Architectural Coatings.
 - .2 SCAQMD Rule 1168- Latest Edition, Adhesives and Sealants Applications.
- .6 Underwriters' Laboratories of Canada (ULC)

- .1 CAN/ULC-S102- Latest Edition, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store gypsum board assemblies' materials level in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
 - .3 Protect from weather, elements and damage from construction operations.
 - .4 Handle gypsum boards to prevent damage to edges, ends or surfaces.
 - .5 Protect prefinished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
 - .6 Replace defective or damaged materials with new.

1.4 AMBIENT CONDITIONS

- .1 Maintain temperature 10 degrees C minimum, 21 degrees C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

Part 2 Products

2.1 MATERIALS

- .1 Standard board: to ASTM C1396/C1396M thickness per wall schedule, ends square cut, edges squared .

- .2 Gypsum sheathing board: to ASTM C1396/C1396M, thickness per wall schedule, ends square cut, edges squared ..
- .3 Water-resistant board: to ASTM C1396/C1396M thickness per wall schedule, ends square cut, edges squared ..
- .4 Glass mat water-resistant gypsum backing board: to ASTM C1178/C1178M, thickness per wall schedule, ends square cut, edges squared ..
- .5 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .6 Resilient clips drywall furring : 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .7 Nails: to ASTM C514.
- .8 Steel drill screws: to ASTM C1002.
- .9 Stud adhesive: to CAN/CGSB-71.25 ASTM C557.
- .10 Laminating compound: as recommended by manufacturer, asbestos-free.
- .11 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, aluminum coated , 0.5 mm base thickness, perforated flanges, one piece length per location.

2.2 FINISHES

- .1 Texture finish: asbestos-free standard white texture coating and primer-sealer, recommended by gypsum board manufacturer.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 ERECTION

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Do application of gypsum sheathing to ASTM C1280.

- .3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .5 Install work level to tolerance of 1:1200.
- .6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .10 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.
- .11 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .13 Erect drywall resilient furring transversely across studs between the layers of gypsum board, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 38 mm common nail 25 mm drywall screw.
- .14 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

3.3 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply gypsum board to metal furring or framing using screw fasteners stud adhesive for first layer, laminating adhesive screw fasteners for second layer. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls to ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
- .3 Apply gypsum board to concrete and concrete block surfaces, where indicated, using laminating adhesive.

- .1 Comply with gypsum board manufacturer's recommendations.
- .2 Brace or fasten gypsum board until fastening adhesive has set.
- .3 Mechanically fasten gypsum board at top and bottom of each sheet.
- .4 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, ____, in partitions where perimeter sealed with acoustic sealant.
- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .7 Install gypsum board with face side out.
- .8 Do not install damaged or damp boards.
- .9 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.4 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Construct control joints of preformed units two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
- .6 Provide continuous polyethylene dust barrier behind and across control joints.
- .7 Locate control joints where indicated at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.
- .8 Install control joints straight and true.
- .9 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
- .10 Install expansion joint straight and true.

- .11 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .12 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
- .13 Splice corners and intersections together and secure to each member with 3 screws.
- .14 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .15 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 Level 3: embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
- .17 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .18 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .19 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .20 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .22 Mix joint compound slightly thinner than for joint taping.
- .23 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
- .24 Allow skim coat to dry completely.
- .25 Remove ridges by light sanding or wiping with damp cloth.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C645-Latest Edition, Specification for Nonstructural Steel Framing Members.
 - .2 ASTM C754- Latest Edition, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.- Latest Edition, Primer, Structural Steel, Oil Alkyd Type.
- .3 Environmental Choice Program (ECP).
 - .1 CCD-047a - Latest Edition, Paints - Surface Coatings.
 - .2 CCD-048- Latest Edition, Surface Coatings - Recycled Water-borne.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, roll formed from 0.53 mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board lath. Knock-out service holes at 460 mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.
- .3 Non-load bearing truss stud framing system: to consist of:
 - .1 Studs: truss-type bent rod web with double rod chords 12 x 6 mm x 1.2 mm channel chords; welded together at contact points. Make rod of minimum 4.5 mm diameter cold drawn steel wire having tensile strength of 620 MPa. Design studs for clip attachment of gypsum lath or wire tying of metal lath.
 - .2 Floor track: snap-in type formed to hold studs securely in place at 50 mm intervals; fabricated from 0.5 mm thick steel sheet; size to suit studs.
 - .3 Ceiling track: channel shaped track for use with stud shoes and 1.2 mm diameter double wire ties; size to suit studs.
 - .4 After fabrication apply one shop coat of CAN/CGSB-1.40 primer to steel surfaces. Descale and clean surfaces before painting.
- .4 Metal channel stiffener: 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .5 Insulating strip: rubberized, moisture resistant 3 mm thick cork foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

Part 3 Execution

3.1 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .4 Erect metal studding to tolerance of 1:1000.
- .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .6 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .7 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .8 Install heavy gauge single jamb studs at openings.
- .9 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .10 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .11 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .12 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .13 Extend partitions to ceiling height except where noted otherwise on drawings.
- .14 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. . Use double track slip joint as indicated.
- .15 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .16 Install two continuous beads of acoustical sealant and insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108.1-Latest Edition, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
 - .2 CTI A118.4- Latest Edition, Specification for Latex Cement Mortar (included in ANSI A108.1).
 - .3 CTI A118.6- Latest Edition, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C144- Latest Edition, Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C847- Latest Edition, Specification for Metal Lath.
 - .3 ASTM C979- Latest Edition, Specification for Pigments for Integrally Coloured Concrete.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34- Latest Edition, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-75.1- Latest Edition, Tile, Ceramic.
 - .3 CAN/CGSB-25.20- Latest Edition, Surface Sealer for Floors.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA A123.3- Latest Edition, Asphalt Saturated Organic Roofing Felt.
 - .2 CAN/CSA-A3000- Latest Edition Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .5 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1168- Latest Edition, Adhesives and Sealants Applications.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Chemical resistant mortar and grout (Epoxy and Furan).
 - .3 Cementitious backer unit.
 - .4 Dry-set cement mortar and grout.
 - .5 Divider strip.
 - .6 Elastomeric membrane and bond coat.
 - .7 Reinforcing tape.

- .8 Levelling compound.
- .9 Latex cement mortar and grout.
- .10 Commercial cement grout.
- .11 Organic adhesive.
- .12 Slip resistant tile.
- .13 Waterproofing isolation membrane.
- .14 Fasteners.

.3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

- .1 Base tile: submit full tile sample of each colour, texture, size, and pattern of tile.
- .2 Floor tile: submit full tile sample of each colour, texture, size, and pattern of tile.
- .3 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

1.3 QUALITY ASSURANCE

.1 Quality Assurance Submittals:

- .1 Manufacturer's Instructions: manufacturer's installation instructions.
- .2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.5 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.6 MAINTENANCE

.1 Extra Materials:

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
- .3 Maintenance material same production run as installed material.

Part 2 Products

2.1 FLOOR TILE

- .1 Refer to finish schedule in drawings

2.2 WALL TILE

- .1 Refer to finish schedule in drawings

2.3 BASE TILE

- .1 Base: coved; same tile as floor tile. Refer to finish schedule in drawings.

2.4 TRIM SHAPES

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.
- .3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- .4 Internal and External Corners: provide trim shapes as follows where indicated.
 - .1 Bullnose shapes for external corners including edges.
 - .2 Coved shapes for internal corners.
 - .3 Special shapes for:
 - .1 Base to floor internal corners to provide integral coved vertical and horizontal joint.
 - .2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.
 - .3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.
 - .4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.
- .5 Provide cove and bullnose shapes for countertops stools, and where indicated and required to complete tile work.

2.5 MORTAR AND ADHESIVE MATERIALS

- .1 Cement: to CSA-A5, type 10.
- .2 Sand: to ASTM C144, passing 16 mesh.
- .3 Latex additive: formulated for use in cement mortar and thin set bond coat.

- .4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.6 BOND COAT

- .1 Organic adhesive: to CGSB 71-GP-22M, Type 1 ANSI A136.1.
 - .1 Maximum VOC limit 65 g/L to SCAQMD Rule 1168.
- .2 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.

2.7 GROUT

- .1 Colouring Pigments:
 - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
 - .2 Colouring pigments to be added to grout by manufacturer.
 - .3 Job coloured grout are not acceptable.
 - .4 Use in Latex Cement Grout.
- .2 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

2.8 ACCESSORIES

- .1 Divider strips:
 - .1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.
 - .2 Zinc, complete with anchors, both sides spaced at 150 mm on centre.
 - .3 Plastic colour , complete with anchors, both sides spaced at 150 mm on centre
- .2 Cleavage plane: polyethylene film to CGSB 51-34 No. 15 asphalt saturated felt to CSA A123.3 .
- .3 Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m².
- .4 Transition Strips: purpose made metal extrusion; stainless steel anodized aluminum type.
- .5 Reducer Strips: purpose made metal extrusion; stainless steel anodized aluminum type; maximum slope of 1:2.
- .6 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
- .7 Sealant: Silicone sealant. Colour to match as close to tile as possible.
 - .1 Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168 .
- .8 Floor sealer and protective coating: to CAN/CGSB-25.20, Type 1 2 to tile and grout manufacturers recommendations.

- .9 Thresholds: bevelled one side, honed finish to exposed surfaces, size to suit door opening and frame width.

2.9 MIXES

- .1 Cement:
 - .1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.
 - .2 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.
 - .3 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included .
 - .4 Measure mortar ingredients by volume.
- .2 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .3 Adjust water volumes to suit water content of sand.

2.10 PATCHING AND LEVELLING COMPOUND

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 Have not less than the following physical properties:
 - .1 Compressive strength - 25 MPa.
 - .2 Tensile strength - 7 MPa.
 - .3 Flexural strength - 7 MPa.
 - .4 Density - 1.9.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.

2.11 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles ~~rounded~~ bullnosed.
- .9 Use bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.
- .11 Allow minimum 24 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.
- .13 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants . Keep building expansion joints free of mortar and grout.

3.3 WALL TILE

- .1 Install in accordance with TTMAC.

3.4 FLOOR TILE

- .1 Install in accordance with TTMAC.

3.5 BASE TILE

- .1 Install in accordance with TTMAC.

3.6 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

3.7 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.8 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Material and installation of site applied paint finishes to new interior surfaces, including site painting of shop primed surfaces.
- .2 Related Sections:
 - .1 Section 01 32 16.06 - Construction Progress Schedule - Critical Path Method (CPM).
 - .2 Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Section 01 33 00 - Submittal Procedures.
 - .4 Section 01 35 29.06 - Health and Safety Requirements.
 - .5 Section 01 45 00 - Quality Control.
 - .6 Section 01 61 00 - Common Product Requirements.
 - .7 Section 01 78 00 - Closeout Submittals.

1.2 REFERENCES

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
 - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 – Latest Edition, (for Surface Coatings).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.
- .5 National Fire Code of Canada - Latest Edition
- .6 Society for Protective Coatings (SSPC)
 - .1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.
- .7 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act (TDGA), Latest Edition, c. 34 .

1.3 QUALITY ASSURANCE

- .1 Qualifications:

- .1 Contractor: minimum of five years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
 - .2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
 - .3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.
- .2 Health and Safety:
- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 SCHEDULING

- .1 Submit work schedule for various stages of painting to Consultant for review. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Consultant for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants.

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.
- .3 Samples:
 - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
 - .2 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating or special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards
 - .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
 - .4 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - .1 Lead, cadmium and chromium: presence of and amounts.
 - .2 Mercury: presence of and amounts.
 - .3 Organochlorines and PCBs: presence of and amounts.

- .5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation and application instructions.
- .7 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.

1.6 MAINTENANCE

- .1 Extra Materials:
 - .1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals .
 - .2 Quantity: provide four litre can of each type and colour of primer stain and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
 - .3 Delivery, storage and protection: comply with requirements for delivery and storage of extra materials.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.
- .2 Acceptance at Site:
 - .1 Identify products and materials with labels indicating:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
- .5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

- .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
- .7 Remove paint materials from storage only in quantities required for same day use.
- .8 Fire Safety Requirements:
 - .1 Provide fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.
- .9 Waste Management and Disposal:
 - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .2 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling.
 - .3 Separate for reuse and recycling and place in designated containers Steel Metal Plastic waste.
 - .4 Place materials defined as hazardous or toxic in designated containers.
 - .5 Handle and dispose of hazardous materials in accordance with, Regional and Municipal, regulations.
 - .6 Ensure emptied containers are sealed and stored safely.
 - .7 Unused paint coating materials must be disposed of at official hazardous material collections site.
 - .8 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
 - .9 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .10 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .11 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.

- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .12 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .13 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange collection by approved organizations for verifiable re-use or re-manufacturing.

1.8 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces
 - .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .3 Provide continuous ventilation for seven days after completion of application of paint.
 - .4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless pre-approved written approval by landlord or owner, perform no painting when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
 - .4 The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
 - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
 - .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
 - .2 Perform painting work when maximum moisture content of the substrate is below:
 - .1 Allow new concrete and masonry to cure minimum of 28 days.
 - .2 15 % for wood.
 - .3 12 % for plaster and gypsum board.

- .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
 - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .4 Additional interior application requirements:
 - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
 - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Only qualified products with E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .7 Provide paint products meeting MPI "Environmentally Friendly" E3 ratings based on VOC (EPA Method 24) content levels.
- .8 Use MPI listed materials having minimum E3 rating where indoor air quality (odour) requirements exist.
- .9 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:

- .1 Water-based Water soluble Water clean-up.
- .2 non-flammable biodegradable.
- .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
- .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
- .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .10 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .11 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .12 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
 - .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
 - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
- .13 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
- .14 Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
- .15 Recycled water-borne surface coatings must not contain:
 - .1 Lead in excess of 600.0 ppm weight/weight total solids.
 - .2 Mercury in excess of 50.0 ppm weight/weight total product.
 - .3 Cadmium in excess of 1.0 ppm weight/weight total product.
 - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
 - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

2.2 COLOURS

- .1 Consultant will provide Colour Schedule after Contract award. Submit proposed Colour Schedule to Consultant for review.
- .2 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Departmental Representative for tinting of painting materials.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 SOURCE QUALITY CONTROL

- .1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.
 - .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
 - .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
 - .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
 - .1 Stucco, plaster and gypsum board: 12 %.
 - .2 Concrete: 12 %.
 - .3 Clay and Concrete Block/Brick: 12 %.
 - .4 Wood: 15 %.

3.4 PREPARATION

- .1 Protection:
 - .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 surfaces as directed by Consultant.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
 - .4 Protect passing pedestrians, building occupants and general public in and about the building.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative Engineer Consultant.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and allow to dry thoroughly.
 - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes blowing with clean dry compressed air or vacuum cleaning.
- .8 Touch up of shop primers with primer as specified.

3.5 APPLICATION

- .1 Apply paint by brush roller air sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

- .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
- .4 Brush out immediately all runs and sags.
- .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .3 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .4 Do not paint over nameplates.
- .5 Keep sprinkler heads free of paint.
- .6 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .7 Paint fire protection piping red.
- .8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .9 Paint natural gas piping yellow.

- .10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .11 Do not paint interior transformers and substation equipment.

3.7 SITE TOLERANCES

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 FIELD QUALITY CONTROL

- .1 Interior painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and local Painting Contractor's Association. Painting contractor shall notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.
- .2 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Consultant and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.
- .3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost.
- .4 Standard of Acceptance:
 - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
 - .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
 - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- .5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

3.9 RESTORATION

- .1 Clean and re-install hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International
 - .1 ASTM A167-Latest Edition, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM B456- Latest Edition, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - .3 ASTM A653/A653M- Latest Edition, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM A924/A924M- Latest Edition, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.81- Latest Edition, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
 - .2 CAN/CGSB-1.88- Latest Edition, Gloss Alkyd Enamel, Air Drying and Baking.
 - .3 CGSB 31-GP-107MA- Latest Edition, Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
- .3 CSA International
 - .1 CAN/CSA-B651- Latest Edition, Accessible Design for the Built Environment.
 - .2 CAN/CSA-G164-Latest Edition, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.
- .4 Samples:
 - .1 Samples may be requested by the client and is to be provided as requested. Samples can be used in work.

1.3 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- .1 Tools:
 - .1 Provide special tools required for assembly, disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.
 - .2 Deliver special tools to Consultant.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect toilet and bathroom accessories from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products materials

- .1 Product materials to be as per equipment schedule.

2.2 COMPONENTS

- .1 Components to be as per the equipment schedule

2.3 FABRICATION

- .1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5 mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .5 Back paint components where contact is made with building finishes to prevent electrolysis.

- .6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CAN/CSA-G164.
- .7 Shop assemble components and package complete with anchors and fittings.
- .8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .9 Provide steel anchor plates and components for installation on studding and building framing.

2.4 FINISHES

- .1 Finishes as per equipment schedule.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrates and surfaces to receive toilet and bathroom accessories previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to toilet and bathroom accessories installation.
- .2 Inform Consultant of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Consultant.

3.2 INSTALLATION

- .1 Install and secure accessories rigidly in place as follows:
 - .1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
 - .2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.
 - .3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.
 - .4 Toilet and shower compartments: use male to female through bolts.
- .2 Install grab bars on built-in anchors provided by bar manufacturer.
- .3 Use tamper proof screws/bolts for fasteners.
- .4 Fill units with necessary supplies shortly before final acceptance of building.
- .5 Install mirrors as per drawings.

3.3 ADJUSTING

- .1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.
- .2 Lubricate moving parts to operate smoothly and fit accurately.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

END OF SECTION

**Electrical
Specifications**

for

**Toronto Zoo
Caribou Cafe
Public Washroom Renovations
361A Old Finch Avenue
Toronto, Ontario**

HCC PROJECT #19064

HCC ENGINEERING LIMITED

**40 Eglinton Avenue East
Suite 600**

**Toronto, Ontario
M4P 3A2**

Tel: (416) 932-2423

Issued for Tender

August 1, 2019

SECTION 00 00 00: TABLE OF CONTENTS.

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Price Schedule and Valuation of Changes

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PANEL SCHEDULES

Schneider Electric Quote CSL-112534

INSTRUCTIONS TO BIDDERS

1. Refer to Instructions prepared by Toronto Zoo.
2. The Contractor shall thoroughly review and comply with the owner's Safety Guidelines and construction practices in addition to legislative construction practices.
3. **Electrical Service Work Prequalification**
 1. The following scope of work has been prequalified and will be assigned to the electrical contractor. Please note that alternate service providers are acceptable to provide the same services.
 1. Schneider Electric Electrical Service Work Scope of Work as detailed in the quote included with these specifications.
 2. The successful electrical contractor's lump sum price shall include the requirement to issue a purchase order to Schneider Electric for \$8,975.00 plus taxes for the supply of the prequalified electrical service work as detailed in the quote included with these specifications.
 3. The service work noted above is for work specifically quantified in the quote. All other electrical systems scopes of work shown on the drawings and detailed in the specifications shall be included as part of the base bid price over and above the attached Schneider Electric Quote amount.

End of Instructions to Bidders Section

PRICE SCHEDULE AND VALUATION OF CHANGES

- .1 We will submit, for approval, a complete breakdown of labour and material costs for all changes.
- .2 The man hour labour units for changes are to be based on labour units from column 1 of the NECA Manual of Labour Units.
- .3 Total mark up including overhead and profit on the **material** shall be limited to 10%.
- .4 Unit hourly composite cost to be used on all changes for labour, as required. The unit hourly composite cost shall contain all provincial taxes, overhead (i.e.: supervision, financing, estimating, project management, CADD, administration, parking, mileage, clean up, safety, truck fees, ESA fees, etc.), **profit** and associated costs for the work involved, excluding H.S.T. Unit hourly composite cost to remain in effect throughout the duration of this project.

SECTION 26 05 00: GENERAL CONDITIONS.

1.1 Project Description:

1. The project encompasses the 361A Old Finch Avenue, Toronto facility. In general, the work shall include, without being limited to the following:
 1. Provide new 120/208 Volt utility power service.
 2. Provide communications conduit systems, grounding systems, lighting and fire alarm system requirements as shown on the drawings.
2. The existing electrical system and operations must be maintained throughout this project.
3. The facility consists of office areas and computer rooms. Therefore, the successful contractor will be working in active and occupied office and technology environments and must make all allowances required to work within such environments.
4. The electrical contractor shall provide a comprehensive Methods of Procedures (MOP's) two weeks prior to each and every power shutdown. MOP's must include a detailed sequence of operations to be completed during the respective shutdown as well as a back out plan. MOP's must be approved by client and the electrical engineer prior to any work taking place.

2.
1.2 Sub-Contractors:

1. The Contractor may not assign or sub-contract any work without the prior written consent of the Construction Manager or his designated representative. A list of sub-contractors must be submitted with the tender response.

1.3 Substantial Completion Of Contract

1. All the equipment and wire must be cleaned and tested, before acceptance by the consultant.
2. This Contractor shall guarantee all equipment and work furnished under this Division for a period of **two (2) years** or such longer periods as may be provided in the warranty of the manufacturer of individual components, whichever is longer from the date of final acceptance by the Engineer. This contractor shall correct all defects developing as a whole or in part, due to defective workmanship, materials or defective arrangement of the various parts or materials damaged as a result of these defects or repairs. All defects shall be made good to the satisfaction of the Engineer at this Contractor's expense.
3. Replace, at no cost, all incandescent lamps burned out during a 30 (thirty) day period, all burned-out fluorescent and HID lamps for a period of 90 (ninety) days and all burned out LEDs based on a 70% lumen maintenance within a 5 year warranty period after date of issuance of certificate of Substantial Performance for the contract of this building.
4. Additional requirements as detailed in Section 26 05 00, paragraph 1.7, sentence 9.

- 1.4 Paragraph not used.
- 1.5 Site Meeting
- 1.5.1 The site meeting will be scheduled during the tender period by the construction manager.
- 1.6 Examination of Premises and Work
 - 1. Visit and examine the site where the work is to be done. Become familiar with all features and characteristics of the site and/or any existing structure before submitting a bid. No allowances will be made by the Owner for any difficulties encountered by this Contractor due to any peculiarities of the site, surrounding public or private property that existed when the Tender was submitted.
 - 2. This Contractor shall examine the structural, mechanical, architectural, electrical and any other drawings issued to satisfy himself that the work can be satisfactorily carried out. Before commencing work or prefabrication, examine the work of other trades and report at once any defect or interference affecting the work of the electrical trade.
 - 3. Where variances occur between the drawings and the specifications, or within either document itself, the item or arrangement of better quality, greater quantity or higher cost shall be included in the contract sum. The Engineer will decide on the item and manner in which the work shall be installed.
 - 4. All bidders shall familiarize themselves with and adhere to the design builder's / owner's building standards and guidelines.

1.7 Terms And Conditions

1. DEFINITIONS

1. The term Owner shall be understood to refer to Toronto Zoo.
 2. The term consultant shall be understood to refer to Howard Cohen, P. Eng., RCDD/LAN, MBA.
 3. The term project manager shall be understood to refer to Toronto Zoo.
 4. The term electrical contractor shall be understood to refer to the successful bidder to this specification for the electrical systems.
 5. The term Contract shall be understood to refer to all items and conditions of this specification, Drawings, the complete tender package, the Contractor's tender submission and any other future contractual arrangements. All such items and conditions shall be binding unless agreed otherwise by the Contractor, Consultant and Owner.
 6. The term Project shall be understood to refer to the complete supply and installation of the Electrical System and components, as defined in this specification and Drawings.
 7. Wherever the words "equal", "equivalent", "approved", or "approved equal" are used, it shall be understood to mean, "equal", "equivalent", "approved", or "approved equal" in the opinion of the Consultant only.
 8. Wherever the words "install", "provide", or "supply and install", are used it shall be understood to mean "provide and install, inclusive of all labour, materials, installation, testing, and connections" for the item to which referred.
 9. "Concealed" is defined as "out of sight" in "normal" viewing conditions, and includes buried in concrete, above acoustic tile or gypsum board ceilings, within masonry or gypsum board constructed walls, within cable trays of below raised access floors.
2. These specifications or the drawings shall not be used alone. Any item or subject omitted from one, but mentioned or reasonably implied in the other, shall be provided. Misinterpretation of any requirements of either the specification or drawings shall not result in any additional charge after submission of Tender. This Contractor shall, by careful study of the total requirements, include all necessary components to make each system workable. The consultant shall be contacted for written clarification on any point before the submission of Tenders.
 3. All terms and conditions of the specifications, tender documents and accompanying Drawings shall be strictly adhered to by the Contractor, unless otherwise noted. Any inability to comply with these requirements must be stated in writing, in detail, with the response submission. Otherwise, it shall be understood that the Contractor is bound to compliance with the stated terms and conditions.
 4. The Contractor shall co-operate fully with the Owner, Consultant, owner and owner's agent and all contractors, sub-contractors and other persons working on the site.
 5. The Contractor shall do the complete installation in accordance with the latest editions of the Building Code, Electrical Safety Code, C.S.A., or other Codes or governing authorities of competent jurisdiction. In case of discrepancies with this or the manufacturer's specifications, the Contractor shall notify the Consultant immediately.

6. Obtain and pay for permits (note: Building Permit obtained by owner) and inspections required for work performed including all required ESA submissions and applications. Provide Certificate (s) of Acceptance from the Authorities Inspection Department, upon completion of work.
7. Submit required Documents and shop drawings to authorities having jurisdiction in order to obtain approval for the Work. Copies of Contract Drawings and Specifications may be used for this purpose. Prepare any additional information, details and drawings which these authorities may require.
8. The Contractor must comply with all requirements of the Occupational Health & Safety Act.
9. In order to meet the requirements of substantial completion the electrical contractor must complete the following:
 1. Installation and successful testing of all electrical system devices as per mutually agreed to tests and commissioning plan.
 2. Submission of all coordination and permit documentation for the Consultant's review.
 3. Submission of all record and As-built documentation.
 4. Correction of any deficiencies in the electrical system.

1.8 Schedule

1. All work must be completed as per the schedule provided by the project manager. Refer to schedule provided by the project manager for additional details. Include for all necessary overtime required to carry out the project. The successful contractor will not be permitted claims as a consequence of this requirement. The successful contractor to submit a full construction schedule before starting any work.
2. Sufficient manpower, materials, equipment, appliances and services are to be kept on site at all times to maintain the scheduled completion of work.
3. All work required to be done after office hours and weekends (including x-raying, core drilling and power shutdowns), shall be included in the tender price. Note: All x-raying and core drilling shall be provided by the electrical contractor.
4. Work associated with power shutdowns (including switching services from permanent, portable or temporary generator distribution back to utility power) and with testing and commissioning of electrical systems (including load bank testing of UPS and EPS) **must be carried out between Saturday @6:00pm and Sunday @5:00am**. All shut downs must be approved by Owner.
5. **Contractor must provide a dedicated onsite electrician for 8 hours on the Monday following each cutover.**

1.9 Contract Drawings

1. The Drawings for the electrical system work are diagrammatic performance Drawings, intended to convey the scope of work and indicate the approximate sizes and locations of equipment and outlets. The Drawings do not intend to show Designer's Architectural, Mechanical or Structural details.
2. Do not scale or measure Drawings, but obtain information regarding accurate dimensions, from the dimensions shown or by site measurements. Follow the Drawings for laying out the work.
3. Make, at no additional cost, any changes or additions to materials and equipment necessary to accommodate Structural conditions (offsets around beams, columns, etc..).
4. Alter at no additional cost, the location of materials and/or equipment as directed, provided that the changes are made before installation, and do not necessitate additional materials.

5. Change location of termination panels and devices at no extra cost providing cable length increase resulting from relocation does not exceed 3m (10 ft.) and information is given before installation.
6. Confirm at the site, the exact location of equipment.
7. Any miscellaneous materials, hardware, devices, wiring, etc., not specifically described, but required for the installation and operation of the electrical system, shall be provided and included as part of the Bid.

1.10 Materials And Equipment

1. All materials and equipment shall be completely new and unused products of only the most recent manufacturer model or version number, C.S.A. certified, and manufactured to the Standards specified.
2. Where there is no alternative to supplying equipment which is not C.S.A. certified, obtain special approval from the local Inspection Department.
3. No damaged, chipped or marked equipment or materials will be accepted and must not be installed.

1.11 Substitutes

1. All tenders must be based on specified items. Substitutes will not be permitted.

1.12 Operation And Maintenance Manuals

1. Provide three (3) sets of operation and maintenance manuals for equipment and products supplied
 1. Provide three (3) soft copy scanned sets of operation and maintenance manuals for equipment and products supplied. Media shall be USB sticks.
 2. Include the following information in the Operation and Maintenance manuals:
 - Names and address of local suppliers for the items included.
 - Technical data, product data, supplemented by bulletins, component illustrations, exploded views, technical descriptions of items and parts lists. Advertising or sales literature is not acceptable.
 - Details of design elements, construction features, component function and maintenance requirements, to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion or feature of the installation.
 3. Review information provided in the maintenance instructions and manuals with the Owners' operating personnel to ensure a complete understanding of the electrical equipment and systems and their operation.

1.13 Progress Payments

1. Submit a complete breakdown of the Contract with each progress billing, indicating percentage of work complete, in a form acceptable to the Owner/Consultant.
2. The amount of monies to be allocated for close out documents must be 3% of contract value. This does not include monies allocated for studies, testing, measurement and verification, commissioning, etc.

1.14 Shop Drawings

1. Submitted Shop Drawings must indicate details of construction, dimensions, capacities, weights and electrical performance and flame spread characteristics of equipment or materials, as well as specification reference Section number and project name.
2. Shop Drawings shall be provided with sufficient space on the front for all Consultant's and Contractor's "review" stamps.
3. Work affected by submittal shall not proceed until review is complete.

4. Review submittal prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of the work and Contract Documents and bears the Stamp of Communications Contractor.
 5. Changes made to the Shop Drawings by the Consultant will not affect the Contract Price.
 6. Submit Shop Drawings for all material and equipment referred to in contract document.
- 1.15 Field Supervision
1. Throughout the duration of the Project, a properly qualified Electrical Field Supervisor must be available at all times. The Supervisor who starts the work must not be changed unless requested by the project manager, or written permission from the project manager is obtained.
 2. In addition, provide proper office supervision of the work. The person responsible for office supervision must visit the site as often as necessary, to ensure work is properly performed, and attend weekly site meetings when so requested.
- 1.16 Site Responsibilities
1. Maintain work areas to be free of construction debris and waste. The disposal of all materials shall be the responsibility of the Contractor.
 2. Make all necessary arrangements to transport materials and equipment to and within the site. The Contractor shall be responsible for arranging for the use of any hoists, lifts, pulleys, winches, cranes or service elevators.
 3. The Contractor is responsible for complete storage, handling, delivery, and installation of all materials used in the performance of the work.
 4. Obtain a copy of the Owner's leasehold design manual and ensure that all requirements are complied with.
- 1.17 Deliveries / Access
1. Coordinate all deliveries to site with the Building Manager. Book loading dock and service elevators 72 hours in advance. Contractor must pre-arrange all site access and authorization for all site personnel and subcontractor personnel with the Building Project Manager or his representative
- 1.18 Testing and Commissioning
1. Provide testing and commissioning as per Testing and Commissioning Plan to be reviewed and approved by the Consultant and Project Manager for all items and their related components.
 2. Supply all required equipment maintenance and operations manuals, for owner's staff use.
 3. Provide all required software for monitoring, annunciation and control/dispatch applications
- 1.19 Other
1. The tender documents shall remain the property of the Project Manager. Bidders are required to return the tender documents to the Project Manager with their bids.
 2. It is the responsibility of the Contractor to perform all cutting, patching and repair related to the electrical system work.
 3. Work by the electrical contractor shall be protected during erection against disfigurement, contamination or damage by mechanical abuse or harmful materials. Protective covers shall be installed where exposure to potential damage is likely. The contractor shall ensure that no eating, drinking or smoking is carried out in

the finished areas. Damages resulting from a breach of these requirements shall be repaired at the cost of the electrical contractor.

4. Existing and adjacent finishes, work and structures shall be protected from damage resulting from work of this project.

1.20 Record and As-Built Drawings

1. The Contractor shall maintain two sets of drawings on site. Clearly mark on these drawings all changes and deviations from the contract drawings and in particular mark the actual location of all feeder conduit locations.
2. All deviations from the contract drawings shall be recorded on the "as-built" drawings, including those changes due to Addenda, Site Instructions or Change Orders.
3. After the date of Substantial Performance, obtain from the Consultant, a set of AutoCAD Version 2019 CD of the most recent Electrical System Drawings. These Drawings shall be marked up to record clearly, neatly, accurately and promptly all locations of Electrical System deviations as a result of Change Orders, Consultant's or Owner's Instruction, site conditions, etc. Utilize normal recognized CAD procedures that match the original drafting methodology. Submit the revised As-Built AutoCAD CD and Drawings (three sets) with changes clearly indicated to the Consultant for review and final presentation to the Owner.
4. For the disk drawing submission described above, the contractor must carry a total **cash allowance** of \$500.00 to have HCC Engineering supply the AutoCAD Version 2019 floor plans denoted as 'Issued for Tender' on disks. Cash allowance to be **included** in the Quotation price.

1.21 Drawings

1. For exact details and quantities, refer to the later sections of this document and to drawing E-1.1, E-1.2, E-1.3, E-2.0, E-2.1, E-3.1, E-5.1, E-6.1 and E-7.1 denoted as 'Issued for Tender August 1, 2019.'

1.22 Contract

1. Conform to the conditions stated in the Contract Form, Document Toronto Zoo RFT 45 (2019-08) bid document.
2. A confidentiality agreement will form an integral part of the contract and will be provided to the successful contractor.

1.23 Cleaning

1. It is the responsibility of the Contractor to dispose of all waste related to this project.
2. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
3. On a daily basis, remove waste materials, rubbish, tools, equipment, machinery, surplus materials and clean all sight exposed surfaces.
4. All materials must be stacked neatly and safely.
5. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.
6. Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate work.
7. The contractor will remove all garbage from site on a daily basis at his own expense.
8. Failure to provide housekeeping and/or maintain a clean work area to the satisfaction of the project manager will result in the project manager providing the necessary housekeeping and/or maintenance service with all related costs, including mark-up's, being charged to the electrical contractor.

1.24 Demolition

1. Disconnect and remove existing conduit and wiring in partitions to be demolished and existing 'BX' cables, conduit and wire in ceiling where existing outlets, lighting fixtures, devices and mechanical equipment are to be removed.
2. Remove all branch circuit wiring and raceways originating from the existing receptacle panels. Wiring and raceways shall be removed back to the source panel. Circuits utilized to feed existing to remain mechanical equipment and other 120/208 volt sources to remain must be maintained.
3. Remove all existing electrical outlets and light switches as well as the associated wiring and raceways not being reused and/or not required for new layout (note: existing outlets and switches to be removed are not shown on the drawings). Provide blank coverplates at all locations where electrical and/or communications devices were removed in which partitions are not being demolished.

1.25 Digital Photos

1. Provide digital photos of all progress to date on a weekly basis. Each photo submission must be reviewed and approved by the consultant prior to continuing with the installation.

End of Section

SECTION 26 05 01: COMMON WORK RESULTS - ELECTRICAL.

PART I - GENERAL

1.1 Reference:

1. This section forms part of every section of Division 16.

1.2 Access Doors:

1. Not Required.

1.3 Cleaning:

1. Clean devices and other surfaces that have been exposed to construction dust and dirt. Clean the insides and outsides of panels and other electrical equipment and completely remove all debris and tools from the project.

1.4 Codes and Standards:

1. Complete the installation of the work in accordance with latest editions of the Building Code, Electrical Safety Code, C.S.A., U.L.C., N.F.P.A, O.S.H.A. or other codes, as required.
2. Comply with Electrical Bulletins in force at time of Bid submission. While not identified and specified by number in this Division, they are to be considered as forming part of related Standards.
3. Abbreviations for electrical terms are as per C.S.A. Z85.

1.5 Finishes:

1. All shop finished metal equipment and enclosure surfaces, must be prepared by removal of rust and scale from the raw metal, degreasing, cleaning, application of rust resistance primer inside and outside, and at least two coats of finish enamel paint. Use factory standard colours unless otherwise specified. Colour reference numbers are Sico.
2. Paint exterior surfaces of indoor electrical equipment to manufacturer's standard.
3. Clean and touch-up (to Consultant's acceptance) surfaces of shop-finished equipment that is scratched or marred during shipment or installation, so as to match original paint.
4. Leave with the Owner, 0.22 gal. of paint of each colour used, in the form of liquid or spray, to allow for future touch-up of damaged areas.

1.6 Inserts, Hangers and Sleeves:

1. Provide hangers, inserts, sleeves and supports as required.
2. Inserts are to be of lead shield type.
3. Hangers must not be welded to structural steel members and burning of holes in structural steel is prohibited.
4. Sleeves are to be of a type suitable for the application, and be sealed and made watertight. Sleeves through concrete shall be sized for free passage of conduit, and installed flush with underside of concrete slab and extend 100mm (4") above finished floor unless otherwise shown.

1.7 Intent:

1. It is the intent of these drawings and specifications that the Contractor provide complete and operational systems as required.
2. Where differences occur, the maximum condition shall govern.
3. Any miscellaneous items, hardware, devices, wiring, etc., not specifically described, but required for the operation of the system, must be provided and included as part of the Bid.

1.8 Mounting Heights:

1. Mounting height of equipment is from finished floor to center line of equipment unless specified or indicated otherwise.
2. If mounting height of equipment is not indicated, verify with Consultant before proceeding with installation.

1.9 Owners Instruction and Trial Usage:

1. Instruct the Owner's operating personnel in the startup, operation, care and maintenance of all the equipment. All equipment to be tested, operational and commissioned before instruction. Provide sheets for signatures of Owner's representative and operating personnel present at each instruction period.
2. Arrange and pay for the service of the manufacturer's factory service Engineer/Technician to supervise the start-up of his equipment installation, and to check, adjust, balance and calibrate components.
3. Provide these services for such period, and for as many visits as necessary to ensure that the Owner's operating personnel are conversant with all aspects of its care and operation.
4. When commissioning is included in the contract:
 1. Prior to any instruction sessions, commissioning coordinator shall submit check lists of each system or equipment indicating their operation status for acceptance by the Owner.
 2. Coordinate all instruction sessions to suit Owner's operation personnel schedule. Submit proposed instruction session schedule c/w training agenda three weeks prior to session start date to Owner for review.
5. The Owner's operating personnel must be permitted to operate the systems under the contractor's supervision for a reasonable period of time prior to Substantial Completion of Contract. This use shall not be misconstrued as acceptance of the equipment.

1.10 Plywood Backboard:

1. Supply and install all plywood backboards required for the work of this Division. Plywood to be highest quality fire retardant fir. 1200 mm wide x 2400 mm high (4'-0" wide x 8'-0" high), 19mm (3/4") thick unless otherwise specified. Prime and paint backboards on both sides with fire retardant paint, equal to CGSB spec. #1-GP-151M, of a colour to match the equipment and services mounted thereon as defined in "Finishes" above. **Do not paint over fire rated stamps.**

2. Plywood backboards are to be provided for mounting the following surface wall mounted equipment:
 - Cabinets.
 - Contactors.
 - Control Panels
 - Disconnect Switches.
 - Junction Boxes 600mm (2 ft.) square and larger.
 - Pull Boxes.
 - Panel Boards.
 - Splitters
 - Transient Voltage Surge Suppression Units.
 - External Breakers
3. Where practical, group devices on a common backboard.

1.11 Protection:

1. Protect exposed live equipment during construction for personnel safety.
2. Shield and mark live parts “LIVE 600 VOLTS”, or with appropriate voltage in English.

1.12 Sealing:

1. Where cables or conduits pass through non fire-rated floors, walls or roof, provide internal and external sealing thereto.
2. Retain the service of a specialty sealant contractor for the work required.
3. Comply with manufacturer’s installation instructions for all sealant applications.
4. For non-fire rated locations, Sealant shall be silicone, that meets requirements of CGSB 19-GP-23, for the size of the joint required, and the types of materials being bonded.
5. For fire rated locations, the fire stop shall meet the requirements of ULC with regards to the type of assembly and the fire separation.
6. Provide architecturally approved air barrier seals and vapor barrier seals to electrical items passing through or terminating within walls, roofs and decks, humidity controlled areas and pressurized areas.

1.13 Sprinkler Proofing:

1. All areas of this building are protected by a wet sprinkler system. **All electrical equipment** to be configured for installation in such an environment.

1.14 Warning Signs:

1. Provide warning signs, as specified to meet requirements of Ministry of Labour Safety Inspection, Inspection Department, Authorities having jurisdiction and Consultant.
2. Use decal signs, in English minimum as required by Authorities.

1.15 Wire Pulling Lubricant:

1. Lubricant to be non-corrosive and CSA approved for the type of cable used.
2. Lubricants to be soap or wax based, depending upon application. Use soap based for short runs and for semi-conducting insulated wires, and wax based for long runs.

End of Section

SECTION 26 05 20: WIRE AND BOX CONNECTORS (0-1000V).

PART I - GENERAL

1.1 Work Included:

1. Provide all wire and box connectors required for a complete electrical system installation.

PART II - PRODUCTS

2.1 Materials:

1. Pressure type wire connectors are to be manufactured to CSA C22.2 No.65. Clamps and connectors are to be manufactured to CSA C22.2 No. 18.
2. Building Wire Connectors shall be:
 1. For wire sizes up to #6 AWG - Ideal "Wing Nut" or Gardner - Bender "Wing Gard".
 2. For Wire Sizes #4 AWG and larger:
 - End to end splices - Burndy YS.
 - Parallel splices - Burndy UC.
 - At studs and bus bars - Burndy QQA (CU / AL).
 - Two or three conductors in parallel - Burndy Q2A or Q3Q (CU / AL).
3. Cable connectors shall be:
 1. For armored TECK cables, watertight type, with open compounded head - T&B series "Spin-on 2" with corrosion resistant boot.
 2. For armored cables steel type with nylon insulated throat - T&B "TITE-Bite".
 3. Clamps or connectors for armored cable, flexible conduit, non-metallic sheathed cable shall be as required.

PART III - EXECUTION

3.1 Installation:

1. Remove insulation carefully from ends of conductors and:
 1. Install connectors and tighten as recommended by manufacturer.
Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

Install bushing stud connectors in accordance with EEMAC 1Y-2.

End of Section

SECTION 26 05 21: WIRE AND CABLES.

PART 1 - GENERAL

1.1 Work Included:

1. Provide building wire as detailed below and as required for a complete electrical installation.

PART II - PRODUCTS

2.1 Materials

1. Wire in Conduit:

1. Conductor material to be annealed commercial grade, copper, 98 percent conductivity, up to #10 AWG solid, with RW90 insulation, #8 and larger, stranded, with RW90 insulation, unless noted otherwise, 300V rating for fire alarm, security and other low voltage circuits, 600V rating for 120 / 208V circuits, 1000V rating for 230 / 400V circuits, 1000V rating for 277 / 480V circuits, 1000V rating for 347 / 600V circuits.

2. Colour Coding (must be approved by ESA Field Inspector):

1. Two conductor, 1 phase: 1 black, 1 white
Three conductor, 1 phase: 1 red, 1 black, 1 white
Three conductor, 3 phase: 1 red, 1 black, 1 blue
Four conductor, 3 phase: 1 red, 1 black, 1 blue, 1 white

3. Ground wires: green.

3. Low voltage Armored Cables Type AC-90:

1. Type to be AC-90, Multi-conductor, with solid, annealed commercial grade 98 percent conductivity tinned copper conductors and cross-linked polyethylene with R90 insulation, 600 volt rating, on #10 and #12 size only.

2. Colour Coding:

- Two conductor, 1 phase: 1 black, 1 white
Three conductor, 1 phase: 1 black, 1 red, 1 white

3. Grounding to be uninsulated, solid copper, with impregnated paper separator.

4. Low voltage Armored Cables - TECK:

1. Type to be TECK, single conductor with annealed. Class B, stranded copper conductors and cross linked polyethylene, RW90 insulation, 1000 volt rating for #8 AWG and larger.
2. Grounding to be uninsulated tinned stranded copper, with non-hygroscopic filter material to maintain circular cross-section.

3. The inner and outer jackets to be PVC "Flamenol" suitable for -40°C , with mylar tape separator and aluminum strip, armour helically wound and interlocked.
5. Two Hour Fire Rated Cable - Mineral Insulated
 1. Mineral Insulated Cables:
 1. Mineral insulated cables shall be manufactured to CSA C22.2 No. 124.
 2. Conductors are to be solid, bare, soft annealed copper, sized as required.
 3. Insulation to be compressed powdered magnesium oxide, to form compact homogeneous mass throughout entire length of cable.
 4. Overall covering to be annealed seamless copper sheath, type LW MI, rated 600 volt, 250°C .

PART III - EXECUTION

3.1 Installation:

1. General:

1. Wire shall be installed in conduit, and sized for the connected load (s) and protection as required, unless otherwise specified.
2. All single neutrals ran with Phase 'A', 'B', 'C' conductors to be minimum #10 AWG. #12 AWG neutrals may be used when run from final junction box to wiring devices.
3. Minimum power conductor wire size shall be #12 AWG, unless otherwise stated. Home runs in excess of 25 m (75 ft.) for circuits protected by a 15A over current device, shall be #10 AWG.
4. The current carrying capacity of the feeders, subfeeders and branch circuit conductors shall be sized to equal or better than shown on the drawings. If wire or cable sizes with equivalent current carrying capacity other than that specified is used, ensure that the voltage drop shall not be more than 2%.
5. The number of wires indicated for various systems is intended to show the general scheme only. The required number and type of wires shall be installed in accordance with the manufacturer's diagrams and with the requirements of the installation.

2. Wire in Conduit:

1. Provide pigtails at all outlets for wiring devices. All neutrals and branch circuits shall be connected in each outlet box to avoid a break in the neutral or the circuit wire when fixture or wiring device is disconnected.
2. At each junction, pull and outlet box make a 360° loop of the stripped uncut ground conductor under the ground screws.

3. Low Voltage Armored Cables - (Feeders):
 1. Do not directly bury in or below concrete slabs or walls.
 2. Do not encircle single conductor cable with ferrous metal.
 3. No splices will be permitted.
 4. Single conductors of the three or four wire circuit shall be run with uniform spacing of not less than one cable diameter throughout the feeder length.
 5. Use wood throated cable clamps to ensure proper and uniform cable spacing.
 6. Where cables are installed on walls, provide mechanical protection over them up to 2.4m (8 ft.) above finished floor, using a 12 gauge U section aluminum cover.
 7. Cable connections to all enclosures, boxes and panels shall be by means of a watertight malleable aluminum connector.

4. Mineral Insulated Cable:
 1. Run cable exposed as required, securely supported by straps.
 2. Make cable terminations by using factory made kits.
 3. Use thermoplastic sleeving over bare conductors at cable terminations.
 4. Do not splice cable.
 5. MI cables must be rigidly supported at maximum spacing of 1m (3 ft). Do not use aluminum products for support.
 6. MI cables shall be used for emergency system feeders and branch circuits requiring a one (1) hour fire rating.

End of Section

SECTION 26 05 27: GROUNDING

PART I - GENERAL

1.1 Work Included:

1. Provide all grounding to conform with the Canadian Electrical Code and the latest instructions of the Inspection Authority, with any further requirements as noted herein.

PART II - PRODUCTS

2.1 Materials:

1. All grounding conductors stranded copper, bare or insulated as indicated on Drawings or in Specifications.
2. All ground wires are to be FT-4 rated factory green. Green tape, spray paint or any other means to alter the colour of the conductor is not permitted.
3. Use Cadweld or Burndy Thermoweld process for all weld connections. AMP of Canada Ltd. Wrench-Lok grounding connectors are an acceptable equivalent to welded connections.
4. All ground connectors to be designed and approved for grounding purposes.

PART III - EXECUTION

3.1 Installation:

1. Ground all conduit, and all non-current carrying metal parts, equipment cases, frames, bases, brackets, etc.
2. Grounding of all trays, AFCR's, racks, cabinets, etc. provided by the electrical contractor.
3. Ground each piece of fixed equipment back to the panel feeding that equipment, by one of the following methods:
 1. Conduit shall **not** be utilized for the ground return conductor.
 2. Where the conduit is flexible, install a separate bare soft drawn copper ground inside the conduit. At the switchboard or distribution panel, provide a grounding bushing, loop the ground conductor through the bushing, and connect to the switchboard ground bus. At the fixed equipment, connect to an internal ground bus, or connect to the inside of the metal enclosure utilizing approved screws and connectors (remove all paint).
 3. Run a separate (dedicated) insulated ground wire in all conduits to all devices and fixtures.
 4. Where equipment is fed by a multi-conductor power cable, provide a ground conductor in the cable. At the switchboard or panel, connect to the ground bus. Use a grounding connector on the cable for positive grounding of the metallic sheath. Loop the ground wire to the grounding connector.
 5. Run a separate ground wire in all flexible conduits. Connect each end to ground bus or lug or connector.
 6. Where mechanical protection is required for insulated grounding conductors install in rigid conduit.
 7. Provide weld connection or wrench type grounding connectors for:
All connections between grounding conductors.

All connections to building steel.

All connections between grounding conductors and cable lugs.

8. Arrange grounding to provide the minimum impedance paths for ground fault currents. Provide any additional grounding required for approval by the inspecting authorities.

3.2 Equipment Grounding

1. Install grounding connections to typical equipment including non-current carrying metal parts of transformers, generators, motors, circuit breakers, cable sheaths, raceways, pipe work, screen guards, switchboards, meter and relay cases, any exposed building metal and building structural steel.

End of Section

SECTION 26 05 31: SPLITTERS, JUNCTION BOXES, PULL BOXES AND CABINETS.

PART I - GENERAL

1.1 Work Included:

1. Provide splitters, junction boxes, pull boxes and cabinets as shown on the drawings and as required for a complete electrical installation.

PART II - PRODUCTS

2.1 Splitter Troughs:

1. Splitter trough construction is to be based on CSA C22.2 No. 76.
2. They shall have sheet steel enclosure, with welded corners and formed hinged cover suitable for locking in closed position.
3. Connection bars are to match required size and number of incoming and outgoing conductors as indicated.
4. Provide at least three spare terminals on each set of lugs in splitter troughs less than 400A and feed through lugs where required.
5. Provide double lugs for neutrals where required.
6. Enclosures shall be CSA/EEMAC Type 1 modified to sprinkler proof enclosure.

2.2 Junction and Pull boxes.

1. Junction and pull boxes construction is to be based on CSA C22.2 No. 40.
2. They shall be suitable for surface mounting and be of welded steel construction with screw-on flat covers.
3. For flush-mounted pull and junction boxes, provide covers with 25 mm (1") minimum extension all around.

2.3 General Cabinets:

1. Type D or E to be sheet steel, for surface mounting, complete with screw on cover (D) or hinged door (E), and return flange overlapping sides, handle and catch.

PART III - EXECUTION

3.1 Splitter Installation:

1. Install splitter troughs where required. Mount plumb, true and square to the building lines.
2. Extend splitters for full length of equipment arrangement except where indicated otherwise.
3. Provide **water tight connections** for all services entering the top of the splitter trough.

3.2 Junction, Pull Boxes and Cabinet installation:

1. Install junction, pull boxes and cabinets in inconspicuous but accessible locations.
2. Only certain junction and pull boxes are indicated. Provide pull boxes so as not to exceed 30 m (100 ft) of conduit run between boxes, and after every 2 (two) 90° bends.

3.3 Identification:

1. Install nameplates.

End of Section

SECTION 26 05 32: OUTLET AND CONDUIT BOXES AND FITTINGS.

PART I - GENERAL

1.1 Work Included:

1. Provide outlet and conduit boxes and fittings as required for a complete electrical system installation.

PART II - PRODUCTS

2.1 Outlet and Conduit boxes - General

1. The construction of outlet boxes, conduit boxes and fittings is to be based on CSA C22.2 No.18.
2. Boxes shall be suitable for the utilization voltage.
3. Combination boxes shall have barriers where outlets for more than one system are grouped.
4. Recessed 100 mm (4") square or larger outlet boxes shall be complete with single or ganged plaster rings to suit application.

2.2 Sheet Steel Outlet boxes:

1. Electro-galvanized steel single and multi-gang device boxes for flush installation, shall be minimum size 75 mm x 50 mm x 37 mm (3" x 2" x 1-1/2") unless otherwise specified or required. 100 mm (4") square outlet boxes shall be used when more than one conduit enters one side, with extension and plaster rings as required.
2. Boxes for door switches and push buttons shall be sized as required.
3. Utility boxes for connection to surface mounted EMT conduit, shall be minimum 100 x 54 x 48 mm (4" x 2-1/8" x 1-7/8") size.
4. Square or octagonal outlet boxes for lighting fixture outlets, shall be minimum 100 mm (4") size.
5. Square outlet boxes with extension and plaster rings for flush mounting devices in finished plaster or tile walls, shall be minimum 100 mm (4") size.

2.3 Masonry Boxes:

1. Electro-galvanized steel masonry single and multi-gang MBD boxes shall be used for flush mounted devices in exposed block walls.

2.4 Concrete boxes:

1. Electro-galvanized sheet steel concrete boxes shall be used for flush mounting in concrete, with matching extension and plaster rings as required.

2.5 Conduit Boxes:

1. Cast FS or FD ferrous boxes with factory-threaded hubs and mounting feet shall be used for outlets connected to surface mounted rigid conduit.

2.6 PVC Boxes:

1. F series and octagon boxes shall be moulded type, with fastening ears and screwed secured covers as required.

2.7 Fittings - General:

2. Bushing and connectors shall be with nylon insulated throats.
3. Provide knock-out fillers to prevent entry of foreign materials.
4. Use conduit outlet bodies for conduit up to and including 32 mm (1-1/4") and pull boxes for larger conduits.
5. Provide double locknuts and insulated bushings on sheet metal boxes.

PART III - EXECUTION

3.1 Installation:

1. Support boxes independently of connecting conduits.
2. Fill boxes with paper, foam sponges or similar approved material to prevent entry of construction material.
3. Size box wiring chambers in accordance with Electrical Safety Code.
4. Gang boxes together where wiring devices are grouped.
5. Provide matching blank cover plates for boxes without wiring devices.
6. Use combination boxes where outlets for more than one system or voltage are grouped.
7. For flush installations, mount outlets flush with finished wall using plaster rings to permit wall finish to come within 5mm (1/4") of opening.
8. Provide correct size of openings in boxes for conduit and armored cable connections. Reducing washers are not allowed.

End of Section

SECTION 26 05 34: CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS.

PART I - GENERAL

1.1 Work Included:

1. Provide conduits, conduit fastenings and conduit fittings as detailed below and as required for a complete electrical installation.

PART II - PRODUCTS

2.1 CONDUITS

1. Rigid and epoxy coated conduit shall be threaded, galvanized steel and shall be manufactured to C.S.A C22.2 No. 45.
2. Electrical metallic tube (EMT) conduit and couplings shall be manufactured to C.S.A. C22.2 No. 83.
3. Flexible metal conduit and liquid tight - flexible metal conduit shall be manufactured to C.S.A. C22.2 No. 56.

2.2 CONDUIT FASTENINGS

1. Conduit straps shall be steel, double hole for rigid or EMT conduit. **Single hole straps are not acceptable.**

2.3 CONDUIT FITTINGS

1. Fittings for conduits shall be manufactured to C.S.A. C22.2 No.18. Provide coatings as per conduit.
2. Fittings for rigid conduit shall be steel threaded type and for EMT conduit, to be steel set screw type.
3. Fittings for flexible conduit and exposed conduit outdoors to be liquid-tight type, straight or angled threaded for rigid and compression for EMT conduit.
4. Expansion fittings for rigid or EMT conduits shall be of the watertight type, with an integral bonding assembly, suitable for deflection in all directions.

2.4 PULLING CABLES

1. Pulling cables shall be ¼" diameter polypropylene and of a strength suitable for tension to be pulled.

2.5 WATERPROOF MEMBRANE

1. Conduits penetrating waterproof membranes shall be PEM #6372.

PART III - EXECUTION

3.1 INSTALLATION (GENERAL)

1. The conduits for the following circuits and systems shall be run separately:
 - 120/208 volt utility power distribution.
 - Normal power to luminaries.
 - Emergency power to luminaries and exit signs.
 - Fire alarm system multiplex loop devices.
 - Fire alarm system signalling devices.
 - Security and CCTV system devices.
 - Telephone and data systems.
 - Control wiring.
2. All conduits to be surface mounted (exposed, EMT) in mechanical and electrical service spaces and rooms and concealed elsewhere unless otherwise shown.
3. Wiring in ceiling spaces and in all partitions shall be EMT.
4. Exposed conduits shall be installed to conserve headroom and cause minimum interference in spaces through which they pass.
5. Use rigid conduit up to 2.4 m (8' -0") above finished floor where exposed indoors
6. **Use RGS conduit PVC coated galvanized rigid steel Robroy Permacote in all outdoor locations and in areas that are not environmentally controlled.**
7. Use electrical metallic tubing (EMT) above grade, and above 2.4 m (8' -0") above finished floor where exposed indoors.
8. Use flexible liquid tight metal conduit for connection to motors, and transformers.
9. Bend conduit without heating. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
10. Mechanically bend conduit over 20mm (3/4") diameter.
11. Field threads on rigid conduit must be of sufficient length to draw conduits tight.
12. Install pulling cables in all conduits that are to remain "empty".
13. A maximum of 2 (two), 90° bends, or equivalent up to 180°, will be permitted without installation of a pull box. Radius of bends must be no less than 10 (ten) times the conduit diameter.
14. Conduits must be dry, before installing wires.
15. Support all branch conduits from building structure. Do not clip conduits to ceiling hangers, sprinkler pipes, plumbing or BAS wiring hangers.

3.2 SURFACE CONDUITS

1. Surface conduits shall be run parallel or perpendicular to building lines.
2. Conduits located near any heat producing equipment shall have 1500 mm (5 ft.) clearance.
3. Conduits adjacent to structural steel, beams or columns shall be run within the flanged portion, unless otherwise shown.
4. Group exposed conduits on surface or suspended channels.
5. Do not pass conduits through structural members except where indicated and approved by owner.
6. Do not locate conduits less than 75 mm (3") parallel to steam or hot water lines. Provide a minimum clearance of 25 mm (1") at crossovers.

3.3 CONDUIT SIZE

1. The minimum conduit size shall be 19 mm (3/4").
2. All undimensioned conduits in the drawings are 19 mm (3/4").

3.4 EXPANSION FITTINGS

1. Conduit expansion fittings shall be provided on all conduits crossing expansion joints, and at maximum of 60 m (200 ft.) spacing.
2. Install expansion fittings perpendicular to expansion joint.
3. Refer to structural drawings for location of expansion joints.

End of Section

SECTION 26 05 34.01: FASTENINGS AND SUPPORTS:

PART I - GENERAL

1.1 Work Included:

1. Provide fastenings and supports as required for a complete electrical system installation.

PART II - PRODUCTS

2.1 Support Channels:

1. U shape pre-galvanized steel, size 41 mm x 41 mm x 22 mm (1-5/8" x 1-5/8" x 7/8"), for surface mounting, suspending, or inserting into poured concrete walls and ceilings as required.
2. All channel fittings to suit channel type.
3. All other fittings to suit equipment weight, location and surface as required.

PART III - EXECUTION

3.1 Installation:

1. Secure plywood backboards, channels, luminaires, equipment and fittings to wood with wood screws, to solid masonry, tile and plaster surfaces with lead anchors, to poured concrete with self-drilling expandable inserts, and to hollow masonry walls with toggle bolts.
2. All ceiling mounted equipment shall be independently supported from the structure. Do not support equipment from ceiling support system.
3. Support equipment, conduit or cable using clips, spring loaded bolts, or cable clamps designed as accessories to basic channel members.
4. Fasten exposed conduit or cables to building using:
 1. One-hole steel straps to secure surface conduits and cables 50 mm (2") and smaller.
 2. Two-hole steel straps for conduits and cables larger than 50 mm (2").
 3. Beam clamps to secure conduit to exposed steel work.

5. For suspended support system:
 1. Support individual cable or conduit runs with 6 mm (1/4") diameter threaded rods and spring clips.
 2. Support two or more cables or conduits on channels support by 6 mm (1/4") diameter threaded rod hangers where direct fastening to building construction is impractical.
 3. Support suspended luminaire using two or more lengths of Weldless "Single Jack", bright zinc plated steel chain, Canadian Standard #10 gauge, 13 links per foot.
6. Provide metal brackets, frames, hangers, clamps and related type of support structure where indicated or as required to support conduit and cable runs.
7. Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
8. Do not use wire lashing or perforated strap to support or secure raceways or cables.
9. Do not use supports or equipment installed for other trades for conduit or cable support except with permission and approval of Consultant.
10. Install fastenings and supports as required for each type of equipment, cable and conduits, and in accordance with manufacturer's installation recommendations.

End of Section

SECTION 26 27 26: WIRING DEVICES.

PART I - GENERAL

1. Provide all wiring devices indicated on drawings and described below.

PART II - PRODUCTS

2.1 Standards:

1. Construction of manually operated general purpose AC switches is to be based on CSA C22.2 No. 111, snap switches on CSA C22.2 No.55, and receptacles, plugs and similar wiring devices on CSA C22.2 No. 42.
2. Devices shall be Specification Grade and of one manufacturer throughout

2.2 Switches:

1. Switches shall be suitable for the voltage and load controlled and shall be single pole or three way as indicated.
2. They shall have terminal holes approved for No. 10 AWG wire, silver alloy contacts, and urea or melamine moldings for parts subject to carbon tracking.
3. They shall be suitable for back and side wiring, and rated for tungsten filament and fluorescent lamps, and up to 80% of rated capacity of motor loads.
4. White 'Decora' style switches shall be used for 120V circuits, in all finished areas.
5. White 'Decora' style switches shall be used for 347V circuits in all areas.

2.3 Receptacles:

1. Duplex receptacles shall be CSA Type 5-15R, 125 volt, 15 Amp, U ground and CSA Type 5-20R (T Slot), 125 volt, 15/20 Amp, U Ground.
2. They shall be 'Decora' style.
3. They shall be suitable for No. 10 AWG, back and side wiring, have break-off links for use as split receptacles and shall have eight (8) back wired entrances, four (4) side wiring screws and double wipe contacts with riveted grounding contacts.

2.4 Coverplates:

1. Coverplates shall be white in finished areas and stainless steel in unfinished areas.
2. Use die cast aluminum coverplates for wiring devices mounted for surface mounted FS or FD boxes, and pressed steel coverplates for utility surface boxes.
3. Use weatherproof spring-loaded, cast aluminum coverplates complete with gaskets for exterior mounted single receptacles and switches, or where indicated.

PART III - EXECUTION

3.1 Installation:

- Switches:
 1. Install single throw switches with lever in "UP" position when switch closed.
 2. Install switches in gang type outlet box when more than one switch is required in one location.

- Receptacles:
 1. Install receptacles in gang type outlet box when more than one device is required in one location.

- Coverplates:
 1. Protect coverplate finish until painting and other work is finished or install after painting is complete.
 2. Do not use flush type coverplates on surface mounted boxes.

End of Section

SECTION 26 28 13.01: FUSES - LOW VOLTAGE

PART I - GENERAL

1.1 Work Included:

1. Supply and install fuses in disconnect switches, etc.. as required to complete this contract.

PART II - PRODUCTS

2.1 Fuses - General:

1. Plug and cartridge fuses shall be manufactured to CSA C22.2 No. 59.
2. HRC fuses shall be manufactured to CSA C22.2 No. 106 and to have interrupting capability of 200,000A symmetrical.
3. Fuses shall be the product of one manufacturer.
4. Fuse type reference L1, L2, J1, R1, etc. have been adopted for use in this specification.

2.2 Fuse Types:

1. HRCI - J fuses.
 1. Type J1, time delay, capable of carrying 500% of its rated current for 10 seconds minimum.
 2. Type J2, fast acting.
2. HRC - L.
 1. Type L1, time delay, capable of carrying 500% of its rated current for 10 seconds minimum.
 2. Type L2, fast acting.
3. HRC - R fuses (For UL Class RK1 fuses, peak let-through current and I^2t values not to exceed limits of UL 198E table 10.2.)
 1. Type R1, (UL Class RK1), time delay capable of carrying 500% of its rate current for 10 seconds minimum, to meet UL Class RK1 maximum let-through limits.
 2. Type R2, time delay, capable of carrying 500% of its rated current for 10 seconds minimum.
 3. Type R3, (UL Class RK1), fast acting Class R, to meet UL Class RK1 maximum let-through limits.
 4. HRCII - C fuses.

PART III - EXECUTION

3.1 Installation:

1. Install fuses in mounting devices immediately before energizing circuit.
2. Ensure circuit fuses fitted to physically matched mounting devices. Install Class R rejection clips for HRCI-R fuses.
3. Ensure correct fuses fitted to assigned electrical circuit.
4. Fuses protecting motor loads and transformers to be type J1 for up to and including 600A and L1 for ratings above 600A.

5. Fuses protecting feeder circuits to be type J2 for up to and including 600A and type L2 ratings above 600A.
6. Fuses protecting other services or equipment shall be of the type required for that purpose.

End of Section

SECTION 26 28 23: DISCONNECT SWITCHES - FUSED AND NON-FUSED

PART I - GENERAL

1.1 Work Included:

1. Provide all disconnect switches shown on the drawings and as required for motors.

PART II - PRODUCTS

2.1 Equipment

1. Fuseholder assemblies to CSA C22.2 No. 39
2. Fusible and non-fusible disconnect switches shall be installed in CSA enclosures.
3. Provide for padlocking in "OFF" switch position by one lock.
4. Provide a mechanically interlocked door to prevent opening when handle in "ON" position.
5. Provide fuses sized as required.
6. Fuseholders in each switch shall be suitable without adapters, for type of fuse as specified.
7. Provide quick make, quick break action.
8. Provide ON-OFF switch position indication on switch enclosure cover.
9. Enclosures shall be CSA/EEMAC Type 1 modified to sprinkler proof enclosure.

PART III - EXECUTION

3.1 Installation:

1. Install disconnect switches with or without fuses as required.
2. Provide **water tight connections** for all services entering the top of the disconnect switches.

End of Section

SECTION 26 50 00: LIGHTING

PART I - GENERAL

1.1 Work Included:

1. Provide lighting fixtures as shown on the drawings and described below.

PART II - PRODUCTS

2.1 Lamp Standards:

1. Incandescent lamps shall be manufactured to CSA C22.2 No. 84.
2. Fluorescent lamps shall be manufactured to ANSI C78.
3. Incandescent, fluorescent and HID lamps shall be of 1 (one) manufacturer, either in total, or in groups defined by lamp type.
4. Ballast and lamps provided under this contract must be an approved combination by both respective manufacturers.

PART III - EXECUTION

3.1 Lamp and Ballast Installation:

1. Refer to luminaire schedule and drawings, for lamp and ballast requirements.
2. Install lamps only when the luminaires are clean.
3. Ensure that lamps are suitable for luminaires before energization and lamp length and colours are that as specified. Report any discrepancies to the consultant.

3.2 Luminaire Installation:

1. Install luminaires accurately and carefully aligned complete with all mounting hardware. Ensure any suspension rods are vertical.
2. All luminaires shall be supplied with accessory items such as yokes, plaster rings, frame adjusters, etc., where required for proper installation.
3. At the time of date of "Substantial Completion" all luminaires, lenses, louvers and lamps must be clean and the lamps illuminated.

3.3 Luminaire Support:

1. All fluorescent fixtures must be chained by 2 points directly to main structure such that they are supported independently of the Lay-in ceiling system.
2. All fixtures in exposed ceiling areas (no T-bar or Drywall) shall be mounted on 1-5/8" unistrut, running the full length of the run of fixtures. The unistrut is to be suspended from the ceiling deck by 3/8" threaded rod from unistrut between the joists. Do not puncture ceiling deck.
3. All lighting feeds for suspended fixtures shall be dropped from the deck or slab straight down into the fixture or raceway. Fixture to fixture conduits will not be permitted. Conduit must go to the deck then to the next fixture.

3.4 Cleaning:

1. All luminaires must be cleaned before lamping and installing lenses or louvres.
2. Use dry, clean, soft cloths if luminaires are dusty. Use mild solvents to clean soiled luminaires.

End of Section

SECTION 26 60 01: ELECTRICAL IDENTIFICATION.

PART I - GENERAL

1.1 Work Included:

1. Identify electrical equipment as specified herein.

1.2 Manufacturer's Nameplates:

1. Have the manufacturer's nameplates affixed to each item of all equipment showing the size, name of equipment, serial number and all information usually provided, including voltage, cycle, phase, horsepower, etc., and the name of the manufacturer and his address. Ensure that all stamped, etched or engraved lettering on plates is perfectly legible. Ensure that nameplates are not painted over. Where apparatus is to be concealed, attach the nameplate in an approved location on the equipment support or frame.
2. Ensure that panels and other apparatus which have exposed faces in finished areas do not have any visible trademarks or other identifying symbols. Mount nameplates behind doors.

PART II - PRODUCTS

2.1 Lamacoid Plates:

1. As noted on drawings for normal power distribution.
2. As noted on drawings for EPS power distribution.

2.2 Conductor Markers:

1. Cable diameter less than 13 mm (1/2") - Electrovert type Z.
2. Cable diameter 13 mm (1/2") and larger - Electrovert #510 strap-on.
3. Colour - white with black markings except fire alarm and life safety system which shall be white with red markings.

PART III - EXECUTION

3.1 Conduit Services - Power:

1. Locate identification:
 - Behind each access door.
 - At each change of direction and at junction boxes.
 - At not more than 10 m (40') apart in straight runs of conduit behind removable enclosures such as lay-in type ceiling, but on both sides of sleeves through walls or floors.
 - Above each floor or platform for vertical exposed conduits, preferably 1500 mm (60") above floor or platform.
 - Use stencils and stencil paint or lamacoid plates on all conduit.
 - Use minimum 25 mm (1") high letters.
 - The identification shall describe system voltage and service, i.e., "120 / 208 volt lighting to panel AA".

3.2 Conduits and outlet boxes:

1. Identify conduits and outlet boxes for the various systems by the use of the following distinctive colour paints. Apply a small area of paint to the inside of each outlet box, pull box and panel as it is being installed. Identify junction boxes in suspended ceiling areas with colour on both inside and outside.
2. Use the colour coding as defined in CGSB Code 24-GP-3A and CSA Standard B53.
3. Where the existing colour coding differs from these Specifications, notify the Consultant of colours used and maintain existing colour coding.

3.3 Equipment Nameplates:

1. Identify all equipment listed below with lamacoid plates, letters 10 mm (0.4") high, unless otherwise noted.
 1. Lighting and Power Panels - Plates to be on outsides of door. Typical identification: "Lighting Panel C 120/208 v, 3 phase, 4 W MAINS 225 AMP 18KA RMS. Supplied from Panel BB".
 2. Disconnect switches and starters - Plates to be mounted externally on switch cover. Typical identification: "Fan S4, 208 v, 3 phase".
 3. Transformers - Plates to be mounted externally on case. Typical identification: "Transformer TR-UPSA 225 KVA/416/120/208 v, 3 PH / 4W fed from Panel UPS A".
2. Secure with mechanical fastening devices except on the inside of panel doors where gluing will be acceptable.

3.7 Wiring Colour Code:

1. Power and Lighting Conductors:

1. Phase A	- Red
2. Phase B	- Black
3. Phase C	- Blue
4. Neutral	- White
5. Ground	- Green
2. For sizes available in black only, use coloured tape markers at junction boxes and terminal points to match phase coding described above.
3. Band green isolated ground conductors with yellow tape.
4. Control conductors - Orange
5. Fire Alarm System Conductors.
 1. Alarm initiating devices and manual pull stations - red and blue.
 2. Alarm signaling devices - black and white.

3.8 Conductor Markers:

1. For power feeders, install markers at either end of the conductors where terminated inside of equipment to match wiring diagram conductor identification or panelboard circuit numbers. Typical identification Panel AA circuits - 21; use "AA-21". For a three phase circuit provide identification on phase A conductor only. For a single phase circuit provide identification on the phase conductor.
2. For Branch circuits supplying single phase and three phase devices such as receptacles and connections to equipment identify conductors at panel and in device outlet box. Install marker on phase conductor inside outlet box. Typical identification if device is connected to Panel B - circuit 14, marker identification "B-14".

End of Section

SECTION 26 60 02: TESTING AND COMMISSIONING OF ELECTRICAL SYSTEMS.

PART I - GENERAL

1.1 Description:

1. Include in work of this section, the testing and commissioning of all new electrical and component systems.
2. Include any specific testing of equipment required by the Hydro Inspection or Supply Authorities.
3. The complete costs of the site, load bank and factory testing and commissioning witnessing of Electrical Equipment is to be included in the Bid price.
4. Inform manufacturers of all factory and site testing requirements and include all their costs in the Bid price.
5. At their own discretion, testing is to be witnessed by the Owner and the Electrical Consultant.

1.2 Scope:

1. Include factory testing and approved certification, where required.
2. Coordinate with the equipment manufacturer, notify the Electrical Consultant in writing, 10 (ten) days before any factory testing to confirm Consultant's desired presence, and be present for all site testing.

1.3 Completion of Work:

1. All electrical systems and equipment shall be totally commissioned and operating before date of "Substantial Completion".
2. Coordinate with other trades and the building operations staff for work which affects the operation of the electrical systems, before submitting request for testing and commissioning. Failing to comply, bear all costs including Consultant's time cost, incurred for re-testing and re-commissioning.

PART II - PRODUCTS

2.1 Materials:

1. Provide all tools, equipment, labour and materials required to perform electrical testing and commissioning as specified. Provide the test results report (s).

PART III - EXECUTION

3.1 General:

1. Perform site testing and commissioning only after all equipment is installed and operational.
2. Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.
3. Provide 4 (four) copies of certificates of all factory and site testing in complete detail bearing in each case, the seal of the engineer responsible for the tests.
4. Submit all test results for Consultant's review.
5. All equipment or system deficiencies identified by factory or site testing procedures, to be corrected by the Contractor prior to obtaining a "Certificate of Substantial Completion".
6. Submit report, at completion of measurements, listing phase and neutral currents on panelboards, dry-type transformers and motor control centres, operating under normal load. Include hour and date on which load was measured, and voltage at time of test.
7. General operations: energize and operate electrical circuit and item. Repair, alter, replace, test and adjust as necessary for a complete and operating electrical system.
8. Test systems and obtain written confirmation from manufacturers that components have been installed correctly and system functioning as intended. Submit certification for power distribution, communications systems and emergency power to Owner's Consultant.
9. Provide labour, instruments, apparatus and pay expenses required for testing. Owner's Consultant reserves right to demand proof of accuracy of instruments used.
10. Perform the following tests on completed power systems:
 1. Supply voltage: measure line voltage of each phase at load terminals of main breakers and report results in writing to Owner's Consultant. Perform test with majority of electrical equipment in use.
 2. Motor loading: measure line current of each phase of motors with motor operating under load, and report results in writing to Owner's Consultants.
 1. Upon indications of imbalances or overloads, thoroughly examine electrical connections and rectify defective parts or wiring.
 2. If electrical connections are correct, report overloads due to defects in driven machines in writing to Owner's Consultant.
 3. Insulation resistance tests:
 1. Megger circuits, feeders and equipment up to 350V with a 500V instrument for at least one (1) minute.
 2. Megger 350-600V circuits, feeders and equipment with a 1000V instrument for at least one (1) minute.
 3. Check resistance to ground before energizing.
 4. Coordinate and carry out motor testing at same time as driven equipment is being tested. In addition to motor loading tests, provide labour and instruments to read and record motor load readings required to supplement tests on driven equipment through various load sequences, as required by driven equipment tests.
11. Immediately prior to occupancy, test entire electrical system by performing loss and return of utility power test. Demonstrate operation of:
 1. Low voltage service equipment and metering
 2. Exit and emergency lighting
 3. Restabilization of systems after power return. Attach report printouts as evidence of expected operation on systems.
 4. User equipment shut-down and auto-restart.

3.2 Field Tests

1. Provide advance notice to Owner's Consultant of proposed testing schedule.
2. Perform tests at time of acceptance of work.
3. Conduct and pay for field tests:
 1. Power distribution, including phase voltage, grounding and load balancing.
 2. Circuits originating from branch distribution panels.
 3. Lighting and lighting control. Motors, heaters and associated control equipment, including sequenced operation.
 4. Emergency Power Systems
4. Perform tests in presence of Owner's Representative.
 1. Provide instruments, meters, equipment and personnel required to conduct required tests.
 2. Test systems to verify operation as specified.
5. Conduct di-electric tests, hi-pot tests, insulation resistance tests and ground continuity tests as required by nature of various systems and equipment

3.3 General Testing:

1. With the system completely connected, perform the following tests:
 1. Control and Switching - all circuits shall be tested for the correct operation of devices, switches and controls.
 2. Polarity Tests - all sockets shall be tested for correct polarity.
 3. Voltage Test - a voltage test shall be made at the last outlet of each circuit. The maximum drop in potential permitted will be 2% on 120 and 208 volt branch circuits and on 208 volt feeder circuits. Any deficiency in this respect shall be corrected.
 4. Phase Balance - measure the load on each phase at each splitter, and lighting and power panelboard and report the results in writing to the Consultant. Rearrange phase connections as necessary to balance the load on each phase as instructed by the Consultant, with the re-arrangement being restricted to the exchanging of connections at the distribution points mentioned in this paragraph. After making any such changes, make available to the Consultant drawings or marked prints showing the modified connections.
 5. General Operations - energize and put into operation each and every electrical circuit and item. Necessary repairs, alterations, replacements, tests and adjustments required shall be made for complete and satisfactory operating systems.

3.4 Sealing:

1. Ensure and verify that all penetrations of electrical equipment have been properly sealed with appropriate material and to the manufacturer's requirements.

3.5 Noise and vibration:

1. Ensure and verify that all isolation equipment has been installed where required and to the manufacturers' recommendations. Include the locations of and measurements of static deflection of spring isolators.

3.6 Coordination Study

1. For the entire electrical distribution system provided as part of this contract and for the existing high voltage base building switchgear and low voltage base building switchgear, supply a report from an independent test agency of the short circuit, protection, co-ordination study of the electrical distribution system. An existing coordination study is not available for contractor's use.

Co-ordination of Protective Devices:

- .1 Ensure circuit protective devices such as overcurrent trips, relays, circuit breakers and fuses are installed to values and settings so as to provide protection by means of opening the closest device to the fault.
- .2 Submit a short circuit, protection and co-ordination study as follows:
 1. Obtain and organize all electrical protection data for all the equipment. This will consist of obtaining the relay types and settings, transformer impedances, cable sizes, fuse sizes and types, motor data, etc., required to carry out the short circuit.
 2. Perform a short circuit analysis to determine short circuit current levels at all critical points in the distribution system, having obtained the available short circuit current available from the Hydro Supply Authority.
 3. Generate appropriate settings for all relays and protective devices from the level of the Hydro Supply Authority feeder protective devices to the largest downstream device on all the feeder secondary distribution levels.
- .3 Provide a complete, comprehensive report at the conclusion of the short circuit, protection and co-ordination study consisting of the following:
 1. A set of time current curve characteristics of all protective devices in the system plotted on log/log graph paper with corresponding short circuit current levels.
 2. Time current damage curves for all transformers, large motors and cables are also to be plotted.
 3. Provide a complete schedule of all main protective relays, fuses and other protective device listing device locations, function number, manufacturer, model number, size, range, setting, etc.
 4. The complete study will illustrate and ensure that the settings and sizes of all protective devices for each voltage level have been chosen to ensure maximum or optional protection and co-ordination during electrical fault or overload conditions.
 5. These generated settings will then be applied by "in-field" testing methods to the respective devices.

3.7 Ground Fault Protection System

1. Inspect relays visually for condition and clean where necessary.
2. Check all connections for tightness.
3. Apply settings to each relay as specified in the short circuit, protection and co-ordination study and test operation by means of a relay test set.
4. Verify each protective system by means of a primary current injection through the zero phase sequence transformer. This will provide correct operation of both the transformer and relay as well as proper functioning of the circuitry through to the breaker tripping elements.

3.8. Arc Flash Analyses

1. For the entire electrical distribution system provided as part of this contract and the existing electrical distribution system shown on the drawings, conduct an electrical arc flash hazard analysis as prescribed under NFPA 70E (CSA Z462-15) and provide a written report summarizing the findings and recommended control measures to be taken. The arc flashing analysis results must be deemed acceptable prior to the equipment purchase.
2. The power systems software utilized to perform the study must be SKM Powertools
3. Provide appropriate labels for all equipment (including all prepurchased equipment and equipment supplied by owner). The labels shall warn a qualified worker who intends to open the equipment for analysis or work that a serious hazard exists and that the workers should follow appropriate work practices and wear appropriate personal protection equipment (PPE) for the specific hazard.
4. An existing coordination study is not available for the electrical contractor's use.

3.9 Emergency Light Level Measurements

1. As part of this scope of work procure the services of a professional engineer to properly aim remote light heads, measure and record emergency lighting levels in foot candles throughout the scope of work areas with a calibrated light meter. Readings shall be taken based on a minimum of one reading for every 20' center in open office areas, equipment rooms and corridors / hallways and one reading in each closed office, meeting room, boardroom and stairwell.
2. All light level readings are to be taken during non-daylight hours.
3. Provide a sealed letter identifying light level readings and stating that the emergency lighting levels meet the requirements of the Ontario Building Code. Notify Owner and Consultant at least ten (10) days prior to proposed testing date and schedule testing at time and date acceptable to Owner and Consultant.

3.10 Test Results

1. Submit test results to Owner's Consultant for review.
2. Testing methods and test results: to CSA, CEC and authorities having jurisdiction.
3. Remove and replace conductors found damaged with new materials.
4. Provide required labour and tools, if during testing Owner's Representative requests equipment be opened and removed from their housings to examine equipment, terminations and connections.

End of Section

SECTION 28 31 00.01: MULTIPLEX FIRE ALARM SYSTEM – BASE BUILDING

PART I – GENERAL

1.1 Work Included:

1. All work required and /or shown on drawings related to life safety systems (ie: fire alarm, EVAC speakers, etc) shall be included in the tenant electrical contractor's tender price. Employ and pay for the services of the owner's contractor to provide all conduit, wiring, devices, final connections, modifications and provision of new interfacing devices in existing system control panels (ie: modules, relays, sub-panel, etc). Ensure new devices to be used are compatible with the existing system. Maintain the integrity of the existing supervised circuits when new devices are to be connected. The system shall be tested certified for proper operation upon completion of the work. Employ and pay for the services of the owner's verification contractor.
2. Employ and pay for the services of the owner's contractor to update the base building active graphic software system with all devices provided, deleted and relocated as part of this scope of work and with fire alarm system zone changes as part of this scope of work.
3. Employ and pay for the services of the owner's contractor to update the base building passive graphics with all devices provided, deleted and relocated as part of this scope of work and with fire alarm system zone changes as part of this scope of work.
4. Employ and pay for the services of the owner's contractor to provide additional power boosters, amplifiers and all other controls and accessories as required to ensure that the existing fire alarm system can accommodate all signaling devices shown on the drawings.
5. In **addition** to the field devices indicated on the drawings to be provided under this contract, include in the tender price to supply and install the following quantities of additional devices throughout the scope of contract floors, complete with 75'-0" of conduit and wiring, programming, testing and certification, labeling, verification and 100% repeat verification for each device post City Fire Department inspection. Reverify all existing fire alarm devices.

Quantity of Devices	Device Type
1	Fire Alarm System Horn

End of Section

Project: 19064

Panelboard: RP-LB

Voltage (V):

Phase/Wire:

Bus and Lugs Rating (A):

CCT NO	Load	Breaker		CCT NO	Load	Breaker	
		Amp	Pole			Amp	Pole
1	FEMALE WASHROOM DRYER/SOAP	20	1	2	MALE WASHROOM DRYER/SOAP	20	1
3	FEMALE WASHROOM DRYER/SOAP	20	1	4	MALE WASHROOM DRYER/SOAP	20	1
5	FEMALE WASHROOM DRYER/SOAP	20	1	6	MALE WASHROOM DRYER/SOAP	20	1
7	FEMALE WASHROOM DRYER/SOAP	20	1	8	MALE WASHROOM DRYER/SOAP	20	1
9	FEMALE WASHROOM DRYER/SOAP	20	1	10	MALE WASHROOM DRYER/SOAP	20	1
11	FEMALE WASHROOM FAUCET	15	1	12	MALE WASHROOM FAUCET	15	1
13	FEMALE WASHROOM FAUCET	15	1	14	MALE WASHROOM FAUCET	15	1
15				16			
17				18			
19				20			
21	FEMALE WASHROOM DOOR OPERATOR	15	1	22	MALE WASHROOM DOOR OPERATOR	15	1
23				24			
25	FEMALE WASHROOM TOILETS	15	1	26	MALE WASHROOM TOILETS	15	1
27	FEMALE WASHROOM TOILETS	15	1	28	MALE WASHROOM URINAL	15	1
29	FEMALE WASHROOM TOILETS	15	1	30	MALE WASHROOM URINAL	15	1
31	MUA-1	15		32	TIMER	15	1
33			2	34	SAS-1	20	1
35	EF	15	1	36			
37	SPARE	15	1	38	SPARE	20	1
39	SPARE	15	1	40	SPARE	20	1
41	SPARE	15	1	42	SPARE	20	1

Project: 19064

Panelboard: RP-LB

Voltage (V):

Phase/Wire:

Bus and Lugs Rating (A):

CCT NO	Load	Breaker		CCT NO	Load	Breaker	
		Amp	Pole			Amp	Pole
43				44			
45				46			
47				48			
49				50			
51				52			
53				54			
55				56			
57				58			
59				60			
61				62			
63				64			
65				66			
67				68			
69				70			
71				72			
73				74			
75	FIBRE PROJECTORS	15		76			
77			2	78	FA BOOSTER PANEL	15	1
79	24-HOUR LIGHTING	20	1	80			
81	LIGHTING CCT	20	1	82	CONTROL CCT	15	1
83	LIGHTING CCT	20	1	84	CONTROL CCT	15	1

Proposal for

Service CDP Retrofit - HCC Engineering

Proposal ID#: CSL-112534

Version: 2

Customer Reference:

August 1, 2019

Schneider Electric Contact Information:

Mohamed Qishawi
Services Sales Representative E&P

mohamed.qishawi@se.com

www.schneider-electric.com/ca

Item	Scope of Work	Price
1	<p>QMQB Switches - Supply & Install <u>Site location:</u> Toronto Zoo, 2000 Meadowvale Rd, Toronto, ON M1B 5K7</p> <p>Schneider Electric Canada Services (SCS) to supply & install:</p> <ul style="list-style-type: none"> • Qty - 1, 3P 120/208V Square D, Twin QMQB switches, (60A/60A), 200KA • Qty - 1, Mounting kits <p>Notes:</p> <ul style="list-style-type: none"> • Require shutdown time:6-8 hours. • Standard Lead time: 6- 8 Weeks. • Price is based on all work being completed during off hours. Excluding Stat/public Holidays. • Fuses supplied by others. (J Class Type) • Testing & commissioning to be performed on de-energized equipment only. • Hydro charges, if applicable, are the responsibility of the customer. • Responsibility for any temporary power requirements by others. • Any waiting beyond a ½ hour will be billed at time and material rate 	\$8,975.00

- Terms and conditions of sale attached;
- Any change to scope of work will automatically imply a revision of price, lead time and/or installation date;
- All necessary Hydro or other permits and particular instructions/inspections for electrical shutdown are not included and are the responsibility of the customer;
- Customer’s technicians/personnel should be planned and present during all shutdown period, otherwise extra charges will be applied;
- Any site orientation training or waiting, beyond ½ hour, or delays due to others will be billed at time and material rates;
- The Purchase Order must match the quote and include the following: Addressed to: Schneider Electric Canada Inc, quote reference # and version, acceptance of NET 30 Payment terms and Standard SE Terms and Conditions, requested installation/commissioning date (if known), site contact person: name, contact number, and email address. Other requested Information includes instruction on invoicing/billing and shipment of parts where applicable.
- If installation or commissioning date changes after reception of PO, please notify us by e-mail at CAEastern.ServicesOrders@schneider-electric.com (Atlantic Region & Quebec), at Central_Services_Orders@schneider-electric.com (Ontario) & at CAWestern.ServiceOrders@schneider-electric.com (West Region).
- Schneider Electric requires a minimum of 6 weeks advanced notice for site services.
- INCO Terms on PO to read EX Works pre-paid & allowed.

This quotation is subject to Schneider Electric Canada Inc.'s published terms and conditions and is our interpretation of information available at the time of quotation. It is the responsibility of the purchaser to confirm

this quotation and the project scope. We reserve the right to adjust the quoted prices for changes to the scope offered.

All prices are in Canadian dollars and do not include applicable taxes.

Payment terms: Net 30 days from date of invoice.

This Quote is valid for a period of 60 days.

Should Schneider Electric become aware or suspect the presence of hazardous materials beyond those to be addressed in the applicable purchase order during performance of its Scope of Work under this Contract, Schneider Electric will be authorized to cease its Scope of Work in the affected area immediately, and will promptly notify Customer of the conditions discovered. Should Schneider Electric stop its Scope of Work because of the discovery or suspicion of hazardous materials, the time for performance of Schneider Electric's Scope of Work will be extended to cover the period required for abatement, cleanup, or removal of the hazardous materials. Schneider Electric will not be held responsible for any claims, damages, costs, or expenses of any kind associated with the period during which Schneider Electric has stopped its Scope of Work as a result of hazardous materials. If appropriate, Schneider Electric will be entitled to an equitable adjustment of the Contract Sum for any increased costs or other charges incurred by Schneider Electric in connection with the existence of its rights under this paragraph.

Customer will be responsible for taking all necessary steps to correct, abate, clean up, or control hazardous materials not addressed by Schneider Electric under the applicable purchase order in accordance with all applicable statutes and regulations. Customer specifically agrees, to the extent allowed by provincial law, to indemnify and to hold Schneider Electric, its officers, agents and employees harmless from and against any and all claims, demands, damages, or causes of action in any way arising out of the release of hazardous materials into the air, soil, or any water system or water course, or any actions taken in connection with same, or any failure to act.

In the event that a purchase order is canceled by the Customer, the following charges will apply:

If the PO is canceled before the work has been scheduled:

- within 5 business days of issue, no fee will apply
- after 5 business days of issue, a cancellation fee equal to 10% of the PO will be charged to purchaser

Once scheduled, if the PO is canceled:

- within the 10th and 5th business days before the scheduled work: a cancellation fee equal to 15% of the PO will be charged to purchaser
- within 5 business days of the scheduled work: a cancellation fee equal to 50 % of the PO will be charged to purchaser
- within 24 hours of the of the scheduled work: a cancellation fee equal to 100 % of the PO will be charged to purchaser

If preparation work is required before the scheduled work and the PO is canceled during this time, an additional fee equal to work completed will be charged to the purchaser.