

ADDENDUM #5

Project	Pope Francis Elementary School	Project #	pf1701
Location	387 Balsam Street North Timmins, Ontario	Date	June 21, 2017
		Pages	1 of 5

The Following information supplements and/or supersedes the bid documents: drawings dated May 17, 2017. This addendum forms part of the contract documents and is to be read, interpreted and coordinated with all other parts. The cost of all contained herein is to be included in the contract sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above-named project to the extent referenced and shall become part thereof. Acknowledge receipt of this Addendum by inserting its number and date on the Tender Form. Failure to do so may subject bidder to disqualification.

Included in Addendum #5 are the following:

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|---|----------|
| • Architectural Addendum #5, dated June 21 st , 2017 | 5 pages |
| • Revised Bid Supplemental Form, dated June 21, 2017 | 5 pages |
| • Door Hardware Adjustments, attached. | 1 pages |
| • Architectural Sketches ADD-9 and ADD-10, dated June 21 th , 2017, attached | 2 pages |
| • Architectural Drawing A7.1, dated June 21 th , 2017, attached | 1 pages |
| • Structural Addendum – S05, dated June 21, 2017, attached. | 3 pages |
| • Helical Piers Structural Specification Pages 5 and 6, attached. | 2 pages |
| • Mechanical & Electrical Addendum #2, dated June 21, 2017, attached. | 16 pages |

Total:	35 pages
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General	<ol style="list-style-type: none"> 1. Insurance: Bidders shall include for Builders Risk Insurance covering the complete scope of work including the existing building to be renovated. 2. Bid Supplementary Form: Contractors shall use revised Bid Supplemental Form attached indicating that the form shall be submitted as part of the bid package on the bid closing date of June 28, 2017. The original form shall be disregarded. 3. Cash allowances: <ol style="list-style-type: none"> 3.1. Contractor shall consider the total amount of cash allowance to be \$477,500.00. 4. Steel Angle at window: <ol style="list-style-type: none"> 4.1. Contractor shall consider the size of steel angle required at all windows as 4"x3"x3/8" 5. Revise Addenda #3 – Architectural Drawings item #1 to read as follows: <ol style="list-style-type: none"> 5.1. Door Schedule – Level 1 Existing; <ol style="list-style-type: none"> 5.1.1. Revise DX117a Door Material to read 'WD' 5.2. Door Schedule – Level 1 Addition; <ol style="list-style-type: none"> 5.2.1. Revise D120 Door Material to read 'ALUM.' 5.2.2. Revise D102 Panel Quantity to read '1' 5.3. Door Schedule – Level 2 Addition;
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	<p>5.3.1. Revise D212 Door Material to read 'WD' and Finish to read 'CF'</p> <p>6. Door Types: 6.1. Contractor shall consider door types 10 and 12 to have a 45 minute fire rating.</p> <p>7. Tackboard: 7.1. Contractor shall consider all CB-# notations to be tackboard.</p> <p>8. Lockers: 8.1. Contractor shall consider the approximate number of lockers to be replaced in the following areas: 8.1.1. Hallway X101 – approx. 60 lockers. 8.1.2. Hallway X201 – approx. 180 lockers.</p> <p>9. Washroom Accessories: 9.1. Contractor shall conform to washroom accessories as identified by Specification. Barrier free accessories to be provided for all washrooms identified as 'BF WC' 9.2. Contractor shall provide washroom accessories for the following washrooms: 9.2.1. X111, X113, X125, X127, 103, 109, 110, 116, 117, 208.</p> <p>10. Contractor Shall refer to list of prequalified Contractors below: 10.1. Pro Pipe Construction, Timmins, On. tom@propipeconstruction.com 10.2. Secord Construction, Timmins, On. chelsea@secordconstruction.com 10.3. Tribury Construction (1995) Inc., Sudbury, On. mail@tribury.com 10.4. Cy Rheault Construction Ltd., Timmins, On. carole@cyrheault.com</p> <p>11. Sprinkler Locations: 11.1. Contractor Shall confirm to sprinkler locations on all drawings including: 11.1.1. Architectural Drawing A5.4 11.1.2. Architectural Drawing A6.1 11.1.3. Architectural Detail 10/A10.1 11.2. Contractor shall note that all sprinkler lines are to be concealed, excluding all rooms with exposed ceilings. Location of sprinkler heads in</p>
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	<p>rooms with exposed ceilings are to be coordinated with Architect.</p> <p>12. Refer to Door Hardware Changes Attached.</p> <p>13. Standing Seam Roofing: 13.1. Standing seam roofing noted on roof plan and details shall be Vicwest 'Tradition 150', colour by Architect.</p> <p>14. Fall Arrest Anchors: 14.1. Fall Arrest Anchors: Thaler FARA-7 glvanized forged eye designed for installation in pre-cast concrete slabs. Locations as shown on drawings.</p> <p>15. Roof Access Hatch and Ladder: 15.1. Roof Access Hatch: Accudor #G3844 glvanized steel roof access hatched with baked enamel finish and #SLE-Y Safety Ladder extension. 15.2. Roof access hatch ladder shall be provided by miscellaneous metals and shall be composed of steel bar rails spaced at 460mm with 25mm square section rungs spaced vertically at 300mm. Stand-offs for installation against a wall to be included. Ladder assembly shall be designed and stamped by an engineer. All components shall be shop-painted and rungs fitted with non-slip carborundum tape.</p>
<p>Architectural Specifications</p>	<p>1. Revise specification section 01 21 00 – Allowances: 1.1. Item 1.3. – Cash Allowances: 1.1.1. Add item 1.3.9.5 to read as follows: Include an allowance of \$15,000.00 for the upgrade of gas services. 1.1.2. Add item 1.3.9.6 to read as follows: Include an allowance of \$400,000.00 for recladding of existing building.</p> <p>2. Revise specification section 01 71 00 – Examination and Preparation: 2.1. Item 1.5. – Survey Requirements: 2.1.1. Add item 1.5.9 – Final Survey Requirements to read as follows: Final legal survey shall include extents of new addition, landscape and hard surface alterations, revised grading, overhead and underground services for the entire site</p> <p>3. Revise specification section 07 26 00 – Vapour Retarders: 3.1. Item 2.1. – Materials: 3.1.1. Add item 2.1.4 – Liquid-applied Vapour Barrier to read as follows: Liquid Applied Waterproofing Membrane: Henry Baker 'Aqua-bloc 720-33' Elastomeric Asphalt Emulsion Waterproofing. 3.1.2. Add item 2.1.5 – Dimpled Pressure Equalization Mat to read as</p>

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	<p>follows: Dimpled pressure equalization mat: Delta Membrane Systems Ltd. 'Delta Drain', minimum 10mm thickness.</p> <ol style="list-style-type: none"> 4. Revise specification section 07 81 00 – Applied Fireproofing: <ol style="list-style-type: none"> 4.1. Contractor shall note that spray-applied cementitious fireproofing (1 hour rating) is required on all roof structure between gridlines 23 and 33. Steel columns within this area shall be coated in intumescent paint (1 hour rating). 4.2. Intumescent paint shall also be applied to structural members of room 201-Bridge as noted on details. 5. Revise specification section 10 10 00 – Miscellaneous Specialties: <ol style="list-style-type: none"> 5.1. Add section 2.2. – Washroom Accessories: <ol style="list-style-type: none"> 5.1.1. Add item 2.2.6 – Adult Change Table to read as follows: Adult Change Table: Foundations Worldwide model #100-SSE-SM folding wall-mounted recessed changing table; 1575mm length, stainless steel finish. 5.2. Add section 2.6. – Whiteboards & Tack Boards: <ol style="list-style-type: none"> 5.2.1. Add item 2.6.1 – Whiteboards to read as follows: Whiteboards shall be Architectural School Products (ASI), magnetic surface with Series 200 extruded clear anodized trim, rail and cork tack strip at top. Sizes as noted on drawings, direct adhered or concealed fastened to walls. These items shall be supplied and installed by the contractor. 5.2.2. Add item 2.6.2 – Tack Boards to read as follows: Corkboards shall be Architectural School Products (ASI) natural cork on particle board backing with Series 200 extruded clear anodized trim and rail. Sizes as noted on drawings, direct adhered or concealed fastened to walls. These items shall be supplied and installed by the contractor. 5.3. Add section 2.7. – Acoustic Panels: <ol style="list-style-type: none"> 5.3.1. Add item 2.7.1 – Acoustic Panels to read as follows: Acoustic panels shall be Sound Solutions 'Avanti' Acoustic Panels, 38mm/1-1/2" thickness, with standard Knoll Textiles 'Foundation' fabric. Colour to be selected by Architect. These items shall be supplied and installed by the contractor. 6. Revise specification section 32 31 13 – Miscellaneous Specialties: <ol style="list-style-type: none"> 6.1. Add section 2.1 – Materials: Chain-link fence specification shall be revised to OPSD 972-130 with all components black vinyl coated.
<p>Architectural Drawings</p>	<ol style="list-style-type: none"> 16. Sheet A1.1 – Site Plan <ol style="list-style-type: none"> 16.1. Drawing 1/A1.1 – Site Plan; <ol style="list-style-type: none"> 16.1.1. Delete note 'Demolish existing hydro pole, contractor to confirm termination

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	<p>of connection to portables prior to demolition”</p> <p>17. Sheet A10.1 – Interior details</p> <p>17.1. Drawing 2/A10.1 – Section Detail – Stair 122</p> <p>17.1.1. Replace drawing 2/A10.1 with ADD-9 attached.</p> <p>17.1.2. Contractor to note Steel Stair hand rail and guards.</p> <p>18. Replace Drawing A7.1 – Elevations with the Attached revised A7.1 issued for Addenda #5.</p>
Structural Addendum	<p>Refer to Structural Addendum – S05, attached.</p> <p>1. Revise Structural Addendum – S01:</p> <p>1.1. Add Helical Piers Structural Specification Pages 5 and 6 attached.</p>
Mechanical & Electrical Addendum	<p>Refer to Mechanical & Electrical Addendum #2, attached.</p>

END OF ADDENDUM # 5

This Bid Supplementary Form shall be submitted with the Bid Package on June 28, 2017

Bidder:

(Name and Address of Bidder)

To: Northeastern Catholic District School Board
101 Spruce Street North
Timmins, Ontario
P4N 6M9

.1 Intent:

I/We offer this 'Bid Supplementary Form' as additional information to the 'Bid Form'. Its contents, under signature and seal, shall form an integral part of the complete offer being made by the undersigned.

As prescribed in the Instructions To Bidders, I/we further understand and agree that the statements contained in this 'Bid Supplementary Form' will be used in combination with 'Bid Form' contents to determine and select the best overall value of which Bid, if any, the Owner may accept.

.2 STATEMENT 'A' - DURATION

Upon receiving Owner's written confirmation to proceed with Work, I/We offer to carry out the Work on a continuous basis and to achieve Substantial Performance of the Contract, barring delays as prescribed in the Contract Documents, by / within: **July 31, 2018**

3. STATEMENT 'B' – CONSTRUCTION PROJECT MANAGER AND SITE SUPERINTENDENT

I/We offer the name and telephone number of the Construction Project Manager and full-time on Site Superintendent that will be used to perform the Work as described in the Contract Documents.

	Name	Telephone Number
.1	_____	_____
.2	_____	_____

4. STATEMENT 'C' – BIDDER PROPOSED ALTERNATES:

I/We offer to add or delete to the Bid Price for the use of methods and / or materials as an alternate to that specified. These Bidder Proposed Alternates include all associated Work that the alternate may have on the Contract Price and/or Contract Time. These alternates as proposed are not included in the Base Bid, and shall only be incorporated into Contract if accepted by the Owner in writing. Prices for Bidder Proposed Alternates do not include Harmonized Sales Tax (HST).

Description	Add	or	Delete
.1 _____	\$ _____		\$(_____)
.2 _____	\$ _____		\$(_____)
.3 _____	\$ _____		\$(_____)
.4 _____	\$ _____		\$(_____)

5. STATEMENT 'D' – SCHEDULE OF SUBCONTRACTORS / WORK BY OWN FORCES:

I/We offer the following Subcontractors, or work that will be performed by my/our Own Forces that will be engaged by the undersigned to complete the work described in the Contract Documents. Should I/We be awarded the Contract, parties named, including My/Our Own Forces, shall be used to perform the Work as indicated and will not be changed without written consent from the Owner and Consultant.

	Name	Telephone Number
Excavation	_____	_____
Site Servicing	_____	_____
Foundations	_____	_____
Structural Steel	_____	_____
Coreslab Structure	_____	_____
Masonry	_____	_____
Windows, Curtain Walls and Doors	_____	_____

Roofing	_____	_____
Cladding	_____	_____
Gypsum board and Ceilings	_____	_____
Millwork	_____	_____
Painting	_____	_____
Mechanical	_____	_____
Sprinklers	_____	_____
Electrical	_____	_____

6. STATEMENT 'E' – SEPARATE PRICES:

I/We submit the following alternate prices which **ARE NOT included** in the Bid Price. Prices include supply and installation and all related costs to the item listed.

- .1 Separate and alternate prices shall include all work for the supply and installation of the work and mark-ups and applicable taxes and duties excluding HST
- .2 Bidders shall complete and fill in blank spaces as requested or tenders may be considered null and void.
- .3 Note that the base tender price DOES NOT include separate prices and alternate prices.
- .4 Should the owner accept of any of these separate and alternate prices, then the prices will be added to the base tender price.
- .5 The lowest base tender price does not necessarily indicate the successful bidder. The forgoing will be analyzed to arrive at a figure which will be considered by the owner with regard to awarding the Contract and thereby determine the successful bidder.

6.1 Separate Price 1: All costs associated with the supply and install of the asphalt parking area noted on drawing A1.1 Site Plan. Asphalt as per specification section 32 31 13 - Asphalt

Add \$ _____ dollars (\$ _____)

6.2 Separate Price 2: All costs associated with the supply and install of Washroom and millwork shown in room 124

Add \$ _____ dollars (\$ _____)

6.3 Separate Price 3: All costs associated with the supply and install of landscaping at the east side of the addition as noted on drawing A1.1 Site Plan.

Add \$ _____ dollars (\$ _____)

7. Signed, sealed and submitted on behalf of:

(Name and Address of Bidder)

(Phone Number)

(Email Address)

(Name and Title)

Corporate Seal

(Signature of Bidder)

(Name and Title of Witness)

(Signature of Witness)

Dated at _____ this _____ day of _____ 20_____
(Town / City / Province) (Month)

END OF SECTION

Pope Francis Elementary School

OPENING D208

The Following product nomenclature has changed, please see below:

Old Product Nomenclature

1	EA	MORTAR GUARD	TAC-LD1-ES	GRY	TAC
1	EA	MORTAR GUARD	TAC-LD1-DC	GRY	TAC

New Product Nomenclature

2	EA	MORTAR GUARD	TAC-6410	GRY	TAC
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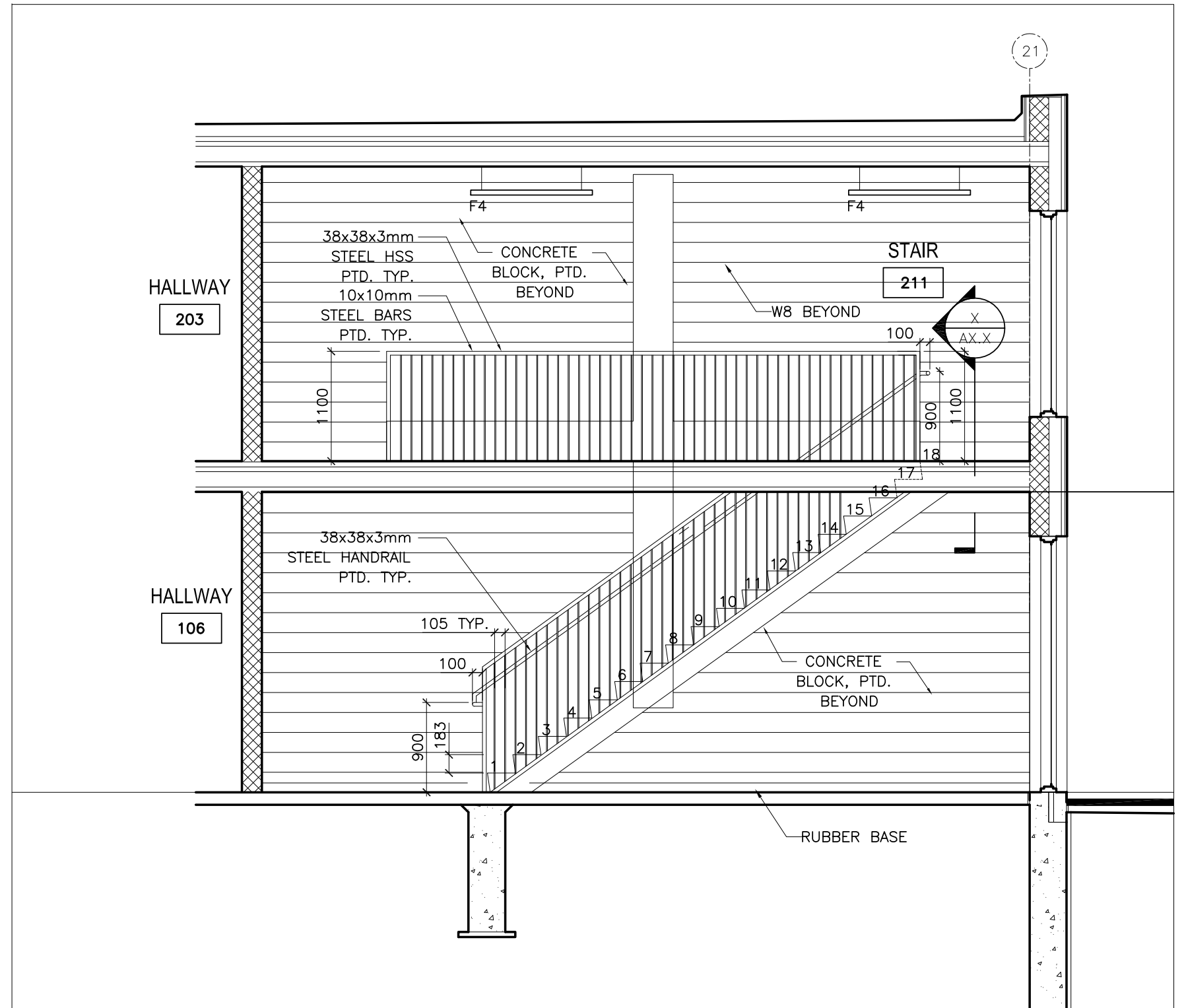
OPENING MISC ITEMS

DELETE

2	EA	CONST CONTROL KEY	48-056 ICX
2	EA	CONSTRUCTION KEY	48-101 (SPECIFY A, B OR C)
2	EA	CUT PERM CONT. KEY	49-052

ADD

5	EA	EXTRACTOR TOOL	35-057
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1 SECTION DETAIL - STAIR 122 - HANDRAIL DETAIL
 ADD-9 1:50

POPE FRANCIS ELEMENTARY
 ADDITION & RENOVATION
 PROJECT#R121
 387 BALSAM STREET NORTH
 TIMMINS, ONTARIO

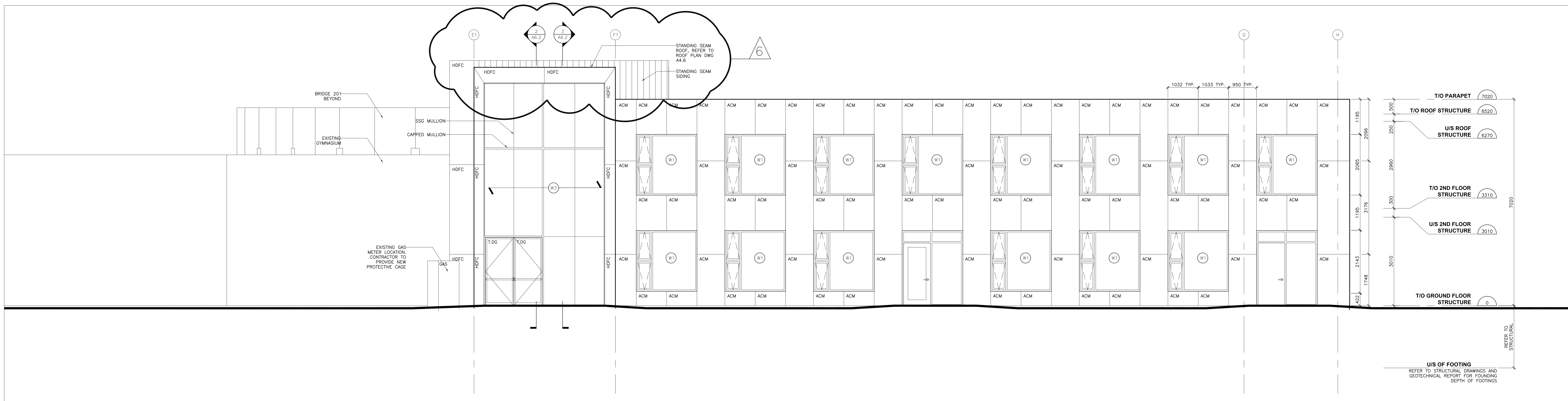
REV	DESCRIPTION	DATE
1	ADD#9	17.06.21



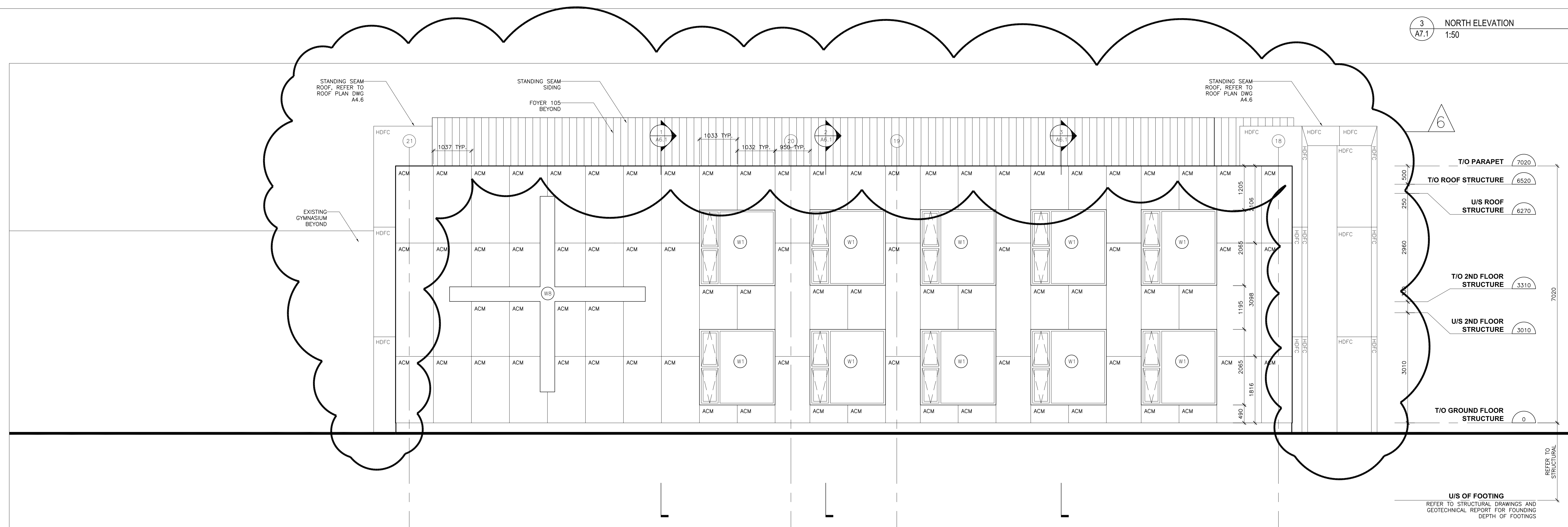
PROJECT NUMBER	pf1701
DATE	17.06.21
SCALE	AS NOTED
DRAWN BY	BM

SECTION DETAIL
 @ STAIR 122
 HANDRAIL DETAILS

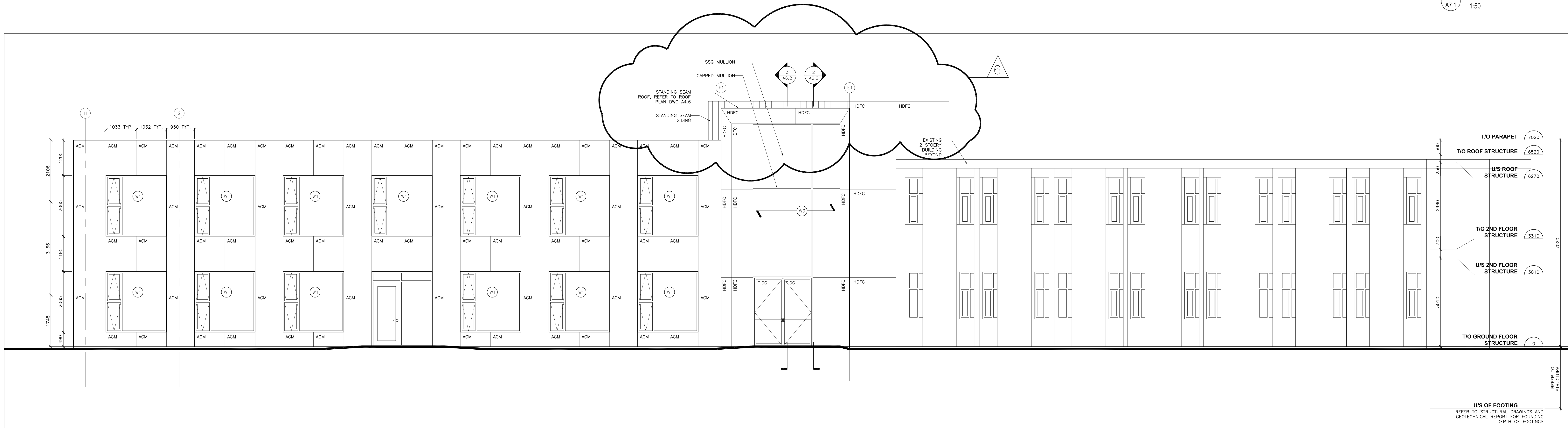
ADD-9



3 NORTH ELEVATION
A7.1 1:50



2 WEST ELEVATION
A7.1 1:50



1 SOUTH ELEVATION
A7.1 1:50

REV	DESCRIPTION	DATE
6	ISSUED FOR ADDENDUM #1	17.06.21
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.06.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24



BORTOLOTTI

PROJECT NUMBER
PF121 (R121)

DATE
17.05.17

SCALE
1:50

DRAWN BY

ELEVATIONS

STRUCTURAL ADDENDUM - S05

17-1079

PTA No.:

S05

Date:

June 21, 2017

To: Bortolotto
533 College St., Suite 401
Toronto, ON M6G 1A
Attn: Brian Muthaliff

Re: 387 Balsam St. N., Timmins, ON
Pope Francis Elementary School Renovations/Additions

The following instruction is a clarification of the Structural Contract Documents. Should the Contractor hold that these instructions involve a change in the contract intent or amount, the Contractor shall notify the Architect in writing and shall not proceed with any work until directed by a change order or field order.

Drawings Issued

Drawing No.	Drawing Title	Revision	Date
S2.1	Foundation Plan	5	June 21, 2017
S2.2	Second Floor Framing Plan	5	June 21, 2017

Description of Work

S2.1 – Foundation Plan:

- 1/S2.1: revise plans as shown bubbled.

S2.2 – Second Floor Framing Plan:

- 1/S2.2: revise plans as shown bubbled.

END OF SA-S05

Regards,

Engineering Link Incorporated



Per: Craig Nicoletti, P.Eng.

Associate

B: 416-599-5465 x128

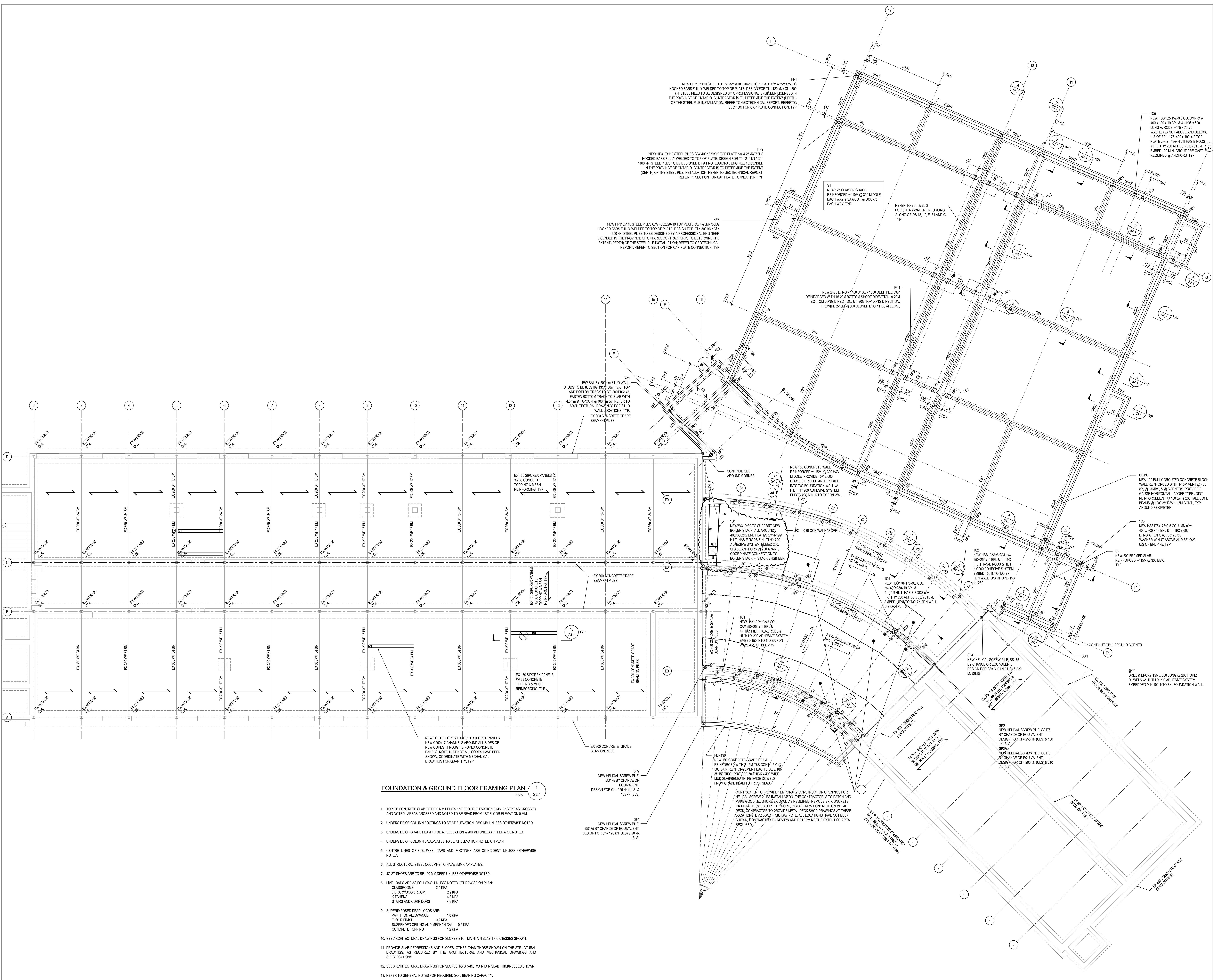
E: Craig.Nicoletti@englink.ca

To: Brian Muthaliff

brian@bortolotto.com

Cc: Alex Horber

alex@bortolotto.com



FOUNDATION & GROUND FLOOR FRAMING PLAN
1:75 S2.1

- TOP OF CONCRETE SLAB TO BE 9 MM BELOW 1ST FLOOR ELEVATION 0 MM EXCEPT AS CROSSED AND NOTED. AREAS CROSSED AND NOTED TO BE READ FROM 1ST FLOOR ELEVATION 0 MM.
- UNDERSIDE OF COLUMN FOOTINGS TO BE AT ELEVATION 2590 MM UNLESS OTHERWISE NOTED.
- UNDERSIDE OF GRADE BEAM TO BE AT ELEVATION 2200 MM UNLESS OTHERWISE NOTED.
- UNDERSIDE OF COLUMN BASEPLATES TO BE AT ELEVATION NOTED ON PLAN.
- CENTRE LINES OF COLUMNS, CAPS AND FOOTINGS ARE COINCIDENT UNLESS OTHERWISE NOTED.
- ALL STRUCTURAL STEEL COLUMNS TO HAVE 8MM CAP PLATES.
- JOIST SHOES ARE TO BE 100 MM DEEP UNLESS OTHERWISE NOTED.
- LIVE LOADS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLAN:
CLASSROOMS 2.4 KPA
LIBRARY/BOOK ROOM 2.9 KPA
KITCHENS 4.8 KPA
STAIRS AND CORRIDORS 4.8 KPA
- SUPERIMPOSED DEAD LOADS ARE:
PARTITION ALLOWANCE 1.0 KPA
FLOOR FINISH 0.2 KPA
SUSPENDED CEILING AND MECHANICAL 0.5 KPA
CONCRETE TOPPING 1.2 KPA
- SEE ARCHITECTURAL DRAWINGS FOR SLOPES ETC. MAINTAIN SLAB THICKNESSES SHOWN.
- PROVIDE SLAB DEPRESSIONS AND SLOPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, AS REQUIRED BY THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.
- SEE ARCHITECTURAL DRAWINGS FOR SLOPES TO DRAIN. MAINTAIN SLAB THICKNESSES SHOWN.
- REFER TO GENERAL NOTES FOR REQUIRED SOIL BEARING CAPACITY.

REV	DESCRIPTION	DATE
6	ISSUED FOR SA No. 05	2017.06.21
5	ISSUED FOR SA No. 02	2017.06.05
4	ISSUED FOR SA No. 01	2017.05.24
3	ISSUED FOR PERMIT	2017.05.19
2	ISSUED FOR TENDER	2017.05.18
1	100% REVIEW	2017.05.19

responsibility of the Contractor. After the design capacity of piles has been proven and as pile driving proceeds, the Consultant will select the second pile to be tested.

- iv. If a pile load test is not successful, carry out one or more additional load tests until the test is successful. Additional load tests required due to test failure shall be at the Contractor's expense.

.2 Acceptance Criteria

- i. Acceptance criteria shall be as agreed with the geotechnical engineer. As a minimum, should results of any test pile show net settlement in excess of 0.25 mm per tonne of test load, a further test shall be carried out by reloading the pile gradually to a test load which will produce a maximum net settlement not in excess 0.25 mm per tonne of test load.
- ii. The allowable working load of the type of pile involved shall then be established at $\frac{1}{2}$ the last test load and additional piles shall be installed at the Contractor's cost as directed by the Consultant wherever required to make up for the reduced allowable working load.

3.3 INSTALLATION

.1 General

- i. Install piles to safely develop the design loads shown.
- ii. Conform to the manufacturer's recommendations.
- iii. Install all piles to at least the same criteria as that determined as being sufficient to develop the design load on the test pile.
- iv. Install individual piles in pile clusters in such a way as to minimize the generation of increased driving resistance by compaction and displacement of the soil.
- v. At the termination of installation of each pile, take readings of the elevation of the top of the pile. On the completion of all piling in a cluster or nearby clusters, take elevation readings again to determine whether any heaving has occurred. If heaving has occurred, re-install the pile to the proper resistance or proceed as the Consultant directs.
- vi. The Contractor shall be responsible for additional cost of pile caps or grade beams arising out of misplaced piles which the Consultant may accept as load carrying.
- vii. Note the location of piles close to adjacent existing construction. Use equipment, which can install the piles in these locations without damaging the existing construction.

.2 Obstructions

- i. As indicated on the soil investigation report, the till contains a certain percentage of boulders. The Contractor shall remove these boulders or drill through them in order to install the piles.
- ii. In a case where an obstruction is encountered above the bearing stratum, an attempt shall be made to drive through such obstruction.

- iii. If the Consultant is satisfied that a pile cannot be installed to the required criteria because of obstructions and if the Consultant is not satisfied that the specified capacity has been obtained, the pile may be abandoned at the Consultant's discretion and shall be paid for as a contract pile.
- iv. Quote a price for each complete additional pile. This price shall form the basis for extras should it be found necessary to add piles because of obstructions encountered.

3.4 FIELD RECORDS

- .1 Keep a record covering each pile installed. The record shall be jointly certified by the Contractor and the inspection company.
- .2 Records shall indicate the following:
 - i. Pile number and identification as to location;
 - ii. Tip elevation, cut - off elevation and length of pile, as installed;
 - iii. Final torque or other installation criteria.;
 - iv. Elevation readings of butt end at completion of installation and subsequent to installing adjacent piles. A record of re-installation, if necessary;
 - v. Record of pile plumbness, position relative to designated position and verification that these are within tolerable limits;
 - vi. Remarks concerning unusual driving conditions, obstructions, damage to piles caused by driving or other similar data

END OF SECTION 31 62 00

**JOHN R. HAMALAINEN
ENGINEERING LTD.**

Consulting Engineers
Since 1987

2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca
www.consultingengineers.ca

Pope Francis Elementary School Addition & Renovation
387 Balsam Street North
Timmins, ON

June 21, 2017
JRHE 3203

M&E Addendum No. 2

The following information, amendments and revisions shall form an integral part of the Tender Documents and where applicable, shall supersede requirements of other documents. Please indicate receipt of this addendum on your Bid Form.

1. General

- 1.1. The following manufacturers can be added as equivalents provided that they are equal in all respects. The contractor is to ensure that all alternates fit in the space allotted.

Equipment	Manufacturer
GRDs	Metalaire
Fans	Cook
Split AC	Daikin
Packaged RTUs	Daikin
ERV	Daikin
Boilers	Viessmann, Weil-McLain
Pumps	Xylem/B&G
Heat Exchanger	Xylem/B&G
Wallfin Radiator	Sigma
Unit Heater	Sigma

- 1.2. Existing BAS system and controls are Honeywell. The contractor is to carry a Honeywell controls price in their bid including all upgrades to the BAS required for the addition and renovations.
- 1.3. Refer to attached Cain Safety Fire Protection Inc. 2017 Flow Test for hydrant flow test results at existing St. Paul School.
- 1.4. Contractor is to include a cash allowance for upgrades to the natural gas service per details on the Bid Form.
- 1.5. Equivalent ampacity and insulation aluminum feeder cables will be accepted as equal to copper.

2. Drawing E0.1

- 2.1. Electrical panel P-3 is to be changed to a 400 amp bottom entry service entrance switchboard with 400 amp main 100% rated, continuous duty breaker with interchangeable trip unit set at 350 Amps. Provide metering compartment suitable Hydro One metering CT's. All breakers to be power panel type breakers. Provide 1" continuous PVC conduit with pull cord from metering compartment to outside wall near Vestibule 125. Coordinate location with owner and Hydro One. Refer to attached sketch SK-1.

3. Drawing E1.1

- 3.1. Note #8 clarification: The existing fire alarm panel located in Mechanical Room 104 is a Mircom FX-2000 addressable panel and is to remain. All new devices/signals are to be addressable. Any remaining devices/signals are to remain as conventional.
- 3.2. Feeder to Panel P3 to P1 to consist of 3 – 3/0, RA90 Cu plus gnd, 53 mm EMT conduit.

4. Drawing E1.2

- 4.1. Universal Washroom kits (auto door buttons, panic button, etc.) are to be supplied by electrical contractor. A generic kit will be acceptable. Shop drawings to be submitted.
- 4.2 Feeder to Panel P3 to P2 to consist of 3 – 3/0, RA90 Cu plus gnd, 53 mm EMT conduit.

5. Drawing E1.3

- 5.1. Electrical note for ERV-1 is to read: “To main electrical panel Room 104. 3#3 + GND in 35mm conduit. Provide 70 amp, 2P breaker.”

6. Drawing M0.1

- 6.1. Add the glycol Make Up Unit Schedule:

Tag	Manufacture & Model	Tank Capacity	Electrical	Comments
GMUU-1	Axiom MF-200	25 liter/0.04 l/s	115V SP	C/W Tank Mounting shelf, Low level alarm panel with remote monitoring contacts. Liquid fill pressure gauge, LED Power indicator, power supply, UL listed,
GMUU-2	Axiom MF-200	25 liter/0.04 l/s	115V SP	

- 6.2 Pumps added to the pump schedule, P11 is to be identical to P08, and supplied by the boiler manufacturer or supplier. P12 and P13 are to be added as HWS pumps to Heat Exchanger HE-02, for the snow melting system, P14 and 15 are to be added as GS and GR pumps from HE-02 to the snow melting Panels. P16 is to be the hot water recirculation pump with Stainless Steel or bronze body.
- 6.3 All pumps supplied by the boiler manufacturer are to have high efficiency EMC motors.
- 6.4 Expansion Tank EX-04 is to be added to the Heat Exchanger Schedule, and be identical to EX-02.
- 6.5 The Domestic Water storage tank with indirect heater is to be a Triangle Tube Smart 120 water heater, Stainless Steel Construction, tank in tank, insulated and jacketed tank. Alternative tank is to be a Lockinvar Model JV120JR with an 8” diameter x 20” long tube bundle insert heat exchanger.
- 6.6 Roof Mounted HVAC Unit Schedule: The model numbers for HVAC-1, HVAC-2 and HVAC-3 shall be changed to 48KCFA06A2A3-2A4C0. Their performance specs shall remain the same. The model number for HVAC-4 shall be changed to 48KCFA05A2A3-2A4C0. Its’ performance specs shall remain the same.
- 6.6 Sprinkler System Notes, Note 7. Split ring hangers complying with NFPA 13 are acceptable.
- 6.7 Delete Mechanical General Note 5, watermain from the property line to the building is site services sub-contractor, see civil drawings.

7. Drawing M0.2

- 7.1. Refer to attached drawing M0.2 Rev. 5. This drawing shall replace drawing M0.2 Rev.4 issued with M&E Addendum #1.

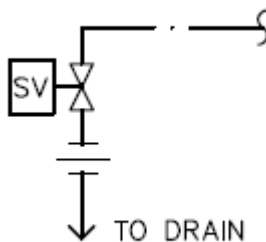
8. Drawing M1.1

- 8.1. In Kindergarten rooms 108, 114, 115, and 121, the fixture between the two lavatories is a water table which is to be supplied by cash allowance.
- 8.2. In rooms 109, 110, 116 and 117, the water closets are to be type WC-1 from the Plumbing Fixture Schedule on drawing M0.1.
- 8.3. There is a crawlspace under the existing gymnasium. The existing water main is in this crawl space and the new water main is to follow the same route. The existing water main is to be disconnected and left on site, not to be disturbed.
- 8.4. In rooms 109, 110, 116 and 117, the domestic water branch piping is to be 32mm for cold water and 25mm for hot water.
- 8.5. Fire extinguishers shown are to be provided by the mechanical contractor.

- 8.6. Add 3" floor drain to Ex Stor room where the main incoming water and sprinkler mains are located.
- 8.7. Refer to attached drawing M1.1 Rev. 5. This drawing shall replace drawing M1.1 Rev.4 from M&E addendum #1.

9. **Drawing M1.2**

- 9.1. In rooms 207 and 210, the lavatories are for future installation. Contractor is to provide rough-in plumbing and drainage only.
- 9.2. The solenoid valve shown in room 206 and 114 is designed to flush the domestic cold water system. Connect to the nearby lavatory drain and provide a CSA approved backflow preventer. Solenoid valve to be controlled by the BAS according to schedule provided at time of construction by the Owner.



10. **Drawing M2.1**

- 10.1 In room Mechanical Room 104, the existing boiler stack is to be removed and replaced. The existing boilers are to be provided with a complete stack venting system from the appliance collars to the stack. Manufacturer is to provide a complete venting system for all 3 boilers in the existing boiler room including the mounting details, instructions, and all hardware for mounting, connectors, etc. The venting supplier is to site measure for all boilers, and vent stack location, and provide an engineered venting system for the entire boiler plant in the existing boiler room. Each of the three boilers are Category 1 or III, RBI Dominion Dominator Boilers, 600,000 Btu/hr input 510,000 Btu/hr output each. The existing stack from the boiler room up through the roof is to be removed and replaced with a new freestanding stack. The stack is to be 9 meter high and one piece construction constructed from a stainless steel liner, 50 mm mineral fiber insulation and a 304 SS outer jacket. A roof flashing ring shall also be provided to provide a watertight seal. The stack is to be designed and certified for venting natural gas category 1 appliance, and be designed to be supported at the roof level (elev. 3310 mm), and a single point 8 feet above the roof back to the adjacent wall for the second story of the existing building at elevation 6450. New boiler venting and free standing stack to be engineered and manufactured by "Cheminee Lining". Provide shop drawings for venting system and stack stamped by licensed professional engineer. See attached specification for further details and structural drawings for framed stack opening.
- 10.2 Fire extinguishers shown are to be provided by the mechanical contractor.

11. **Drawing M2.3**

- 11.1. Refer to attached sketch SK-2 for revised boiler schematic.

12. **Drawing M2.4**

- 12.1. Refer to attached drawing M2.4 Rev. 5. This drawing shall replace drawing M2.4 Rev.4 issued with M&E Addendum #1.

13. **Drawing M2.5**

- 13.1. Glycol snow melting system and panels to be as per layout and specifications shown on drawing M2.5. Snow melting system is to be controlled by the existing BAS.
- 13.2. Refer to attached drawing M2.5 Rev. 5. This drawing shall replace drawing M2.5 Rev.4 issued with M&E Addendum #1.

14. Drawing ME1.1

- 14.1. Refer to attached revised drawing ME1.1 Rev. 4 for the rerouting of existing 120/240, 400 Amp service presently serving the portables. This drawing shall replace drawing ME1.1 Rev. 3 issued in the Tender Documents. New underground cables are to be installed from the existing hydro pole to panel P-3 in room 107. Also see Addendum Item 2 above regarding panel P-3. Coordinate providing of new service with Hydro One.



John R Hamalainen, P.Eng., BDS

Attachments:

1. Cain Safety Fire Protection Inc. 2017 Flow Test (1 page)
2. SK-1 – Revised Panel Schedule P-3 (1 page)
3. SK-2 – Revised Boiler Schematic (1 page)
4. Freestanding Stack Specifications – Model STS2 (4 pages)
5. ME1.1 Rev. 4 (1 page)
6. M0.2 Rev. 5 (1 page)
7. M1.1 Rev. 5 (1 page)
8. M2.4 Rev. 5 (1 page)
9. M2.5 Rev. 5 (1 page)

**CAIN SAFETY FIRE PROTECTION INC.
2017 FLOW TEST**

HYDRANT FLOW TEST RESULTS							
CLIENT :	NORTHEASTERN CATHOLIC DISTRICT SCHOOL BOARD						
LOCATION :	ST PAUL'S SCHOOL - BALSAM AND 9TH AVE						
DATE :	<u>JUNE 8TH, 2017</u>						
TECHNICIAN:	<u>DENNIS TAILLEFER AND STEVE TOWSLEY</u>						
							RESULTS :
STATIC PRESSURE HYDRANT #	1				90	PSI	
RESIDUAL PRESS. HYDRANT #	1				80	PSI	
COEFFICIENT	HOSE MONSTER IS A .9				0.9		
DIAMETER					2 1/2"		
PITOT ON HYDRANT #	2				20	PSI	
FLOW					755	USGPM	
HYDRANT # <u>1</u> :	LOCATION	THE CORNER OF 9TH AND BALSAM					
	TYPE:	ROUND / SQUARE / INSERT				ROUND	
	MAKE / MODEL	CENTURY					
HYDRANT # _____ :	LOCATION	IN FRONT OF 400 BALSAM					
	TYPE:	ROUND / SQUARE / INSERT				ROUND	
	MAKE / MODEL	CENTURY					
	: DATE / TIME :	THURS , JUNE 8 , 2017 11 PM -					
	: FEED FLOW RUNS FROM HYDRANT	1	TO HYDRANT				2
	: DISTANCE BETWEEN HYDRANTS IS	347	FEET	SIZE	?	INCHES	
	: FLOW TEST DONE WITH THE USE OF	2 1/2" FLOW MONSTER					
NOTES :							

ELECTRICAL PANEL SCHEDULE

POWER SUPPLY 120/240 VOLTS AC, 1PH ,3W
C/W 400 AMP MAIN BREAKER WITH 350 AMP TRIP UNIT

PANEL REFERENCE -----> P-3

CCT. NO.	DESCRIPTION	CCT BKR AMP	PHASE A B	CCT BKR AMP	DESCRIPTION	CCT. NO.		
1	BOILER B01-A & BOILER PUMP	15	●	15	PUMPS #1,3,5	2		
3	BOILER B01-B & BOILER PUMP	15	●			4		
5	BOILER B01-C & BOILER PUMP	15	●			6		
7	PUMP #7	15	●	15	PUMPS #2,4,6	8		
9			●			10		
11	HVAC #2	60	●	60	HVAC #1	12		
13			●			14		
15	HVAC #4	60	●	60	HVAC #3	16		
17			●			18		
19	CARETAKER ROOM RECEPTACLES	15	●	15	CARETAKER ROOM UNIT HEATER	18		
21	PANEL P-1	200	●			200	PANEL P-2	20
23			●					22
25						24		
27						26		
29						28		
31						30		
33						32		
35						34		
37						36		
39						38		
41						40		
41						42		

No.:	Description:	Date:

Item	Drawing Information:	Date:
	INFORMATION ONLY	
	PRELIMINARY DESIGN	
	CLIENT APPROVAL	
	PRE - TENDER SET	
	ISSUED FOR CONSTRUCTION	
	SUBMITTAL REVIEW ONLY	
	ESTIMATE PURPOSE ONLY	
	ISSUED FOR TENDER	
	11 x 17 REFERENCE BOOK	

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JOHN R. HAMALAINEN
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Consulting Engineers

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Tel: (705) 522-5745 Fax: (705) 522-9650
Info@consultingengineers.ca

Project: **POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION**

Drawing: **REVISED PANEL SCHEDULE P-3**

Drawn by: CR

Checked by: JRH

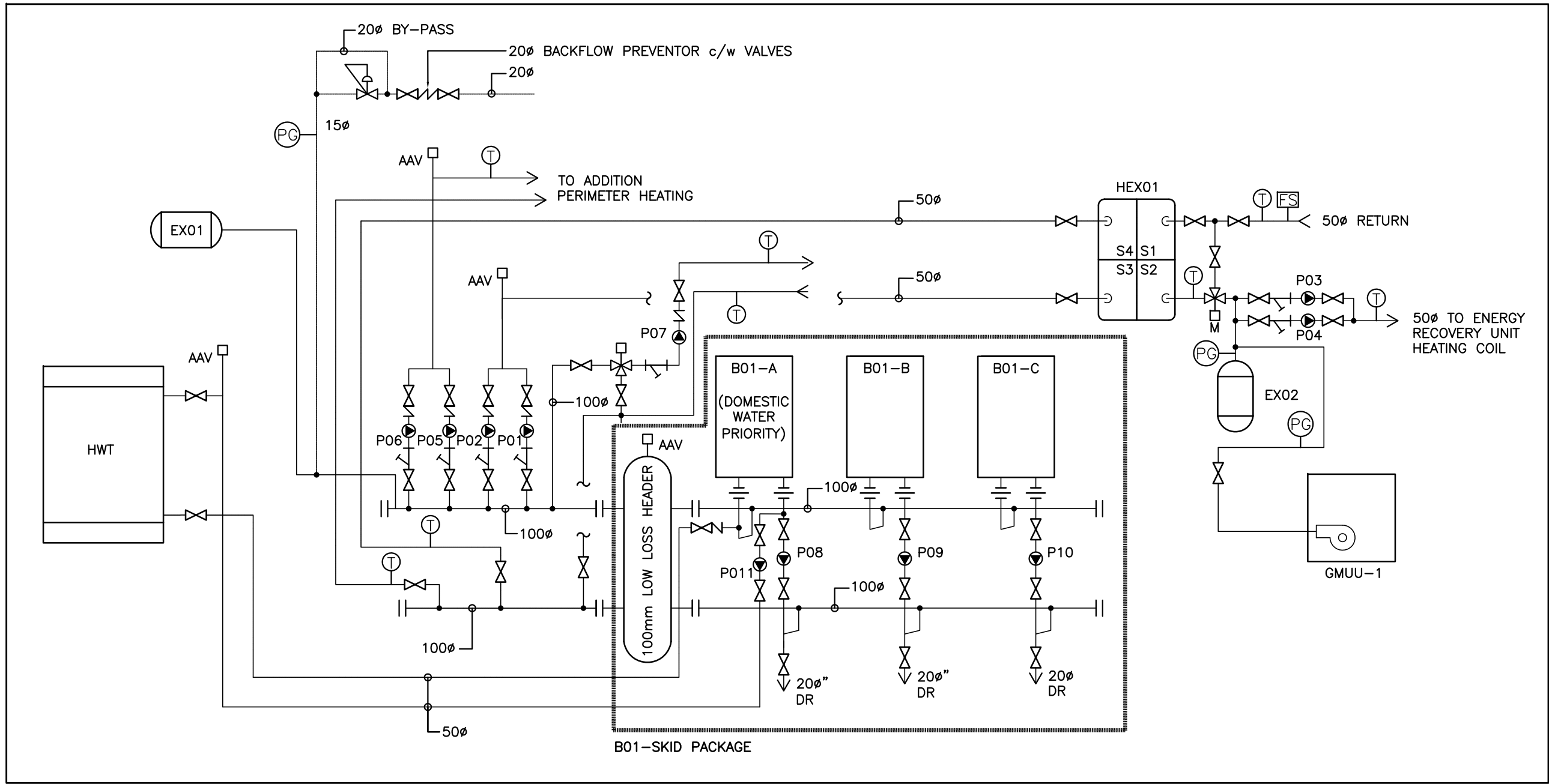
Project No.: 3203

Date: JUNE 2017

Scale: NTS

Drawing No.: **SK-1**

The Contractor shall verify all dimensions and report any inconsistencies to the Engineer before proceeding with the work. The Contractor shall indemnify and hold the Engineer and its consultants harmless from and against all claims, damages, losses and expenses, including reasonable attorneys' fees, that may be incurred by the Engineer and its consultants. Do not scale drawings.



2 BOILER SCHEMATIC
M2.3 N.T.S

Item	Description	Date
1	INFORMATION ONLY	
2	PRELIMINARY DESIGN	
3	CLIENT APPROVAL	
4	PRE - TENDER SET	
5	ISSUED FOR CONSTRUCTION	
6	ISSUED FOR TENDER ONLY	
7	ISSUED FOR TENDER ONLY	
8	ISSUED FOR TENDER ONLY	
9	ISSUED FOR TENDER ONLY	
10	ISSUED FOR TENDER ONLY	
11	11 x 17 REFERENCE BOOK	

Project: POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
 Drawing: REVISED BOILER SCHEMATIC

Drawn by: JB
 Checked by: JRH
 Project No.: 3203
 Date: JUNE 2017
 Scale: NTS
 Drawing No.: SK-2

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The Contractor shall verify all dimensions and report any inconsistencies to the Engineer before proceeding with any work. The Contractor shall be responsible for the accuracy of the drawings and any errors or omissions are the property of the Engineer and are protected by copyright. Do not scale drawings.

PART 1 - GENERAL

1.1 Related Work

- .1 Refer to other sections of Division 15 for equipment and accessories associated with the stack described in this section.
- .2 Refer to Section xxxxx.

1.2 Scope of work

This section consists of all work to be done on specified stacks and flues shown in there respective drawings.

1.3 Quality Assurance

- .1 Welders Qualifications : All welders shall be certified in accordance with ASME BPVC Section IX – Welding and Brazing Qualifications.
- .2 All work shall comply with the following codes and standards:
 - .a NFPA – Standard for chimneys, fireplaces, vents and solid fuel burning appliances,
 - .b SMACNA – Low pressure duct standards for fabricated breeching and smoke pipe,
 - .c ASME-ST51 – Steel Stacks
 - .d ASHRAE – ASHRAE Equipment Handbook for chimney, gas vent and fireplace systems for material requirements and design criteria.

1.4 Submittals

- .1 Product Data: Submit product data including materials, dimensions, weights, welding requirements and accessories
 - .2 Shop Drawings: Submit detailed layout shop drawings showing plan and elevation views, thickness, overall height, diameter, required clearances, assembly, supports, anchors, bolts and installation instructions. Drawings shall be stamped by a registered professional engineer.
 - .3 Quality Control Submittals
 - .a Certificates: Submit certificates of materials compliance with specified ASTM, UL, and ASHRAE requirements.
 - .b Calculations: Submit complete engineering calculation report
-

certifying that stack is designed to resist wind, earthquake and vortex loads. Calculations shall be stamped by a registered professional engineer. Deflection of the stack shall in no case exceed a ratio of 1 to 200.

PART 2 - PRODUCTS

2.1 Freestanding Stack

- .1 Factory welded cylindrical double wall freestanding stack of 12" diameter by 30 feet of height. The sections of the stack shall be up to 50 feet in length.
 - .2 Structural shell made of AISI 316L Stainless Steel.
 - .3 A minimum of 2" of high temperature mineral fiber insulation shall be installed over the entire height of the structural shell. (also available in ceramic fiber)
 - .4 Outer jacket made of aluminum 20ga shall cover the entire surface of the insulation. (also available in 304 and 316 stainless steel).
 - .5 Accessories :
 - .1 Hinged insulated access door at the base of the stack, galvanized butterfly nuts and handle,
 - .2 False bottom plate @ 10° with a 2" diameter SCH40 NPT drain,
 - .3 Structural reinforcement around openings for both, the access door and any flues,
 - .4 All reinforcements needed to prevent ovaling of the stack,
 - .5 Base plate made of ASTM-A36 carbon steel, as shown on the drawings.
 - .6 ASTM-A307 anchor bolts installed according to the manufacturer's instructions.
 - .7 Velocity cone at the top of the stack designed to increase the
-

- velocity of the exhaust gases,
- .8 Flanged transition piece of same type as chimney for conveying flue gases from breeching to the stack.
 - .9 Lifting lugs, unloading lugs and temporary braces
- .6 Optional accessories :
- .1 Ladder with safety cage and/or safety climbing device.
 - .4 Anti vortex equipment such as helical spoilers and tuned mass dampers.
 - .6 Painters trolley.
 - .7 Interior baffles to facilitate exhaust gases flow.
 - .8 Galvanized aircraft type guy-wire including turnbuckles, shackles, thimble and cable clamps.
 - .10 Fabric or metal type expansion joints c/w flanges and baffles
 - .12 Butterfly or multi-blade louver motorized damper.
- .7 Required Quality : STS2 Model from Cheminée Lining.e inc.

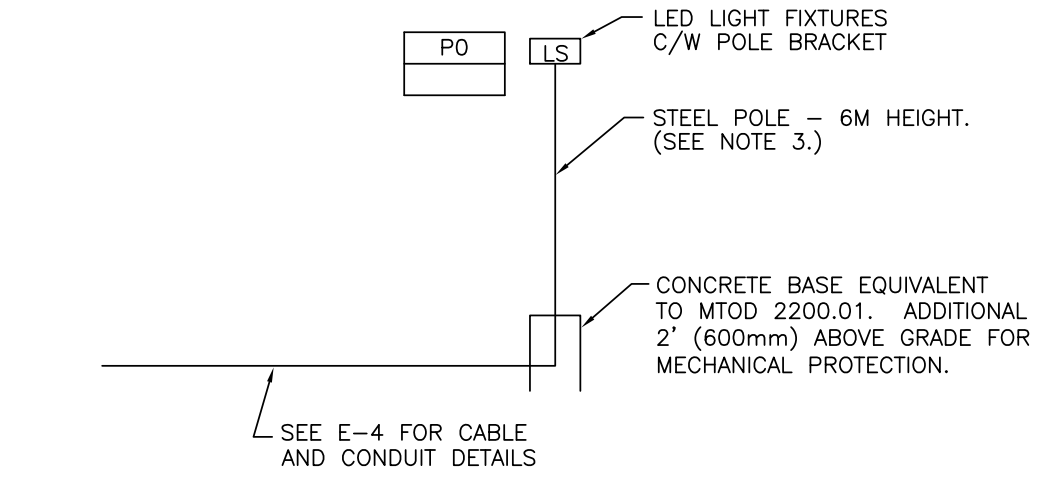
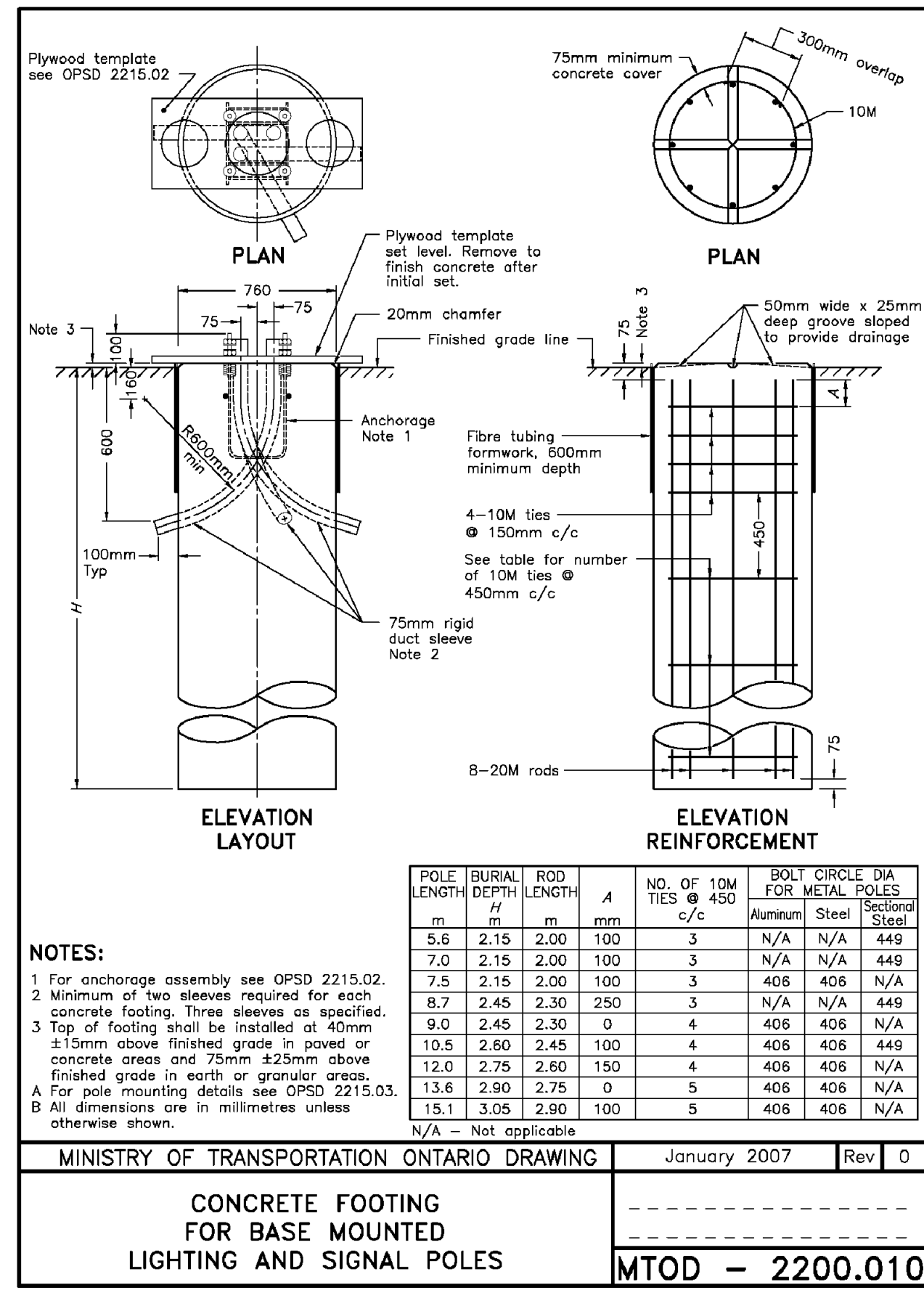
PART 3 - EXECUTION

3.1 Installation - General

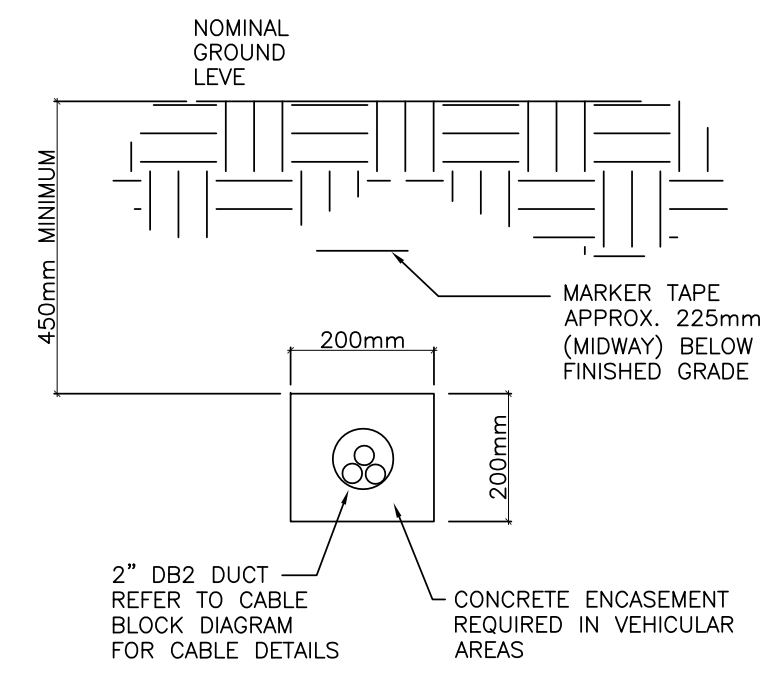
- .1 The stack along with all necessary accessories (anchor bolts, structural supports for the base and wall, roof flashing, opening for the drain, etc) shall be delivered and installed during the erection of the assembly, to ensure the proper and safe function of the stack .
 - .2 All pre-installation work to permit erection of any temporary stack must be done.
 - .3 The stack shall be mounted and secured on a concrete foundation. The vertical leveling shall not exceed 1" per 50 feet. Grouting of the
-

stack base plate shall be by the stack erector.

- .4 All sections passing through building walls must be insulated. While also respecting clearance requirements of combustible materials, in accordance with NFPA-211.
 - .5 Foresee the necessary vertical and horizontal supports for the stack and the flues.
 - .6 All electric arc and resistance welds will conform to section IX of the ASME-BPVC.
 - .7 All joints will be completely welded and fully penetrated. Certified welders shall do all field welding.
 - .8 Foresee the installation of the lightning protection, see division 16.
 - .9 The stack erector shall use special care in unloading and handling all materials from truck. The erector shall handle all materials in such a way as to minimize damage and to avoid scarring or damaging the paint or the outer jacket.
-

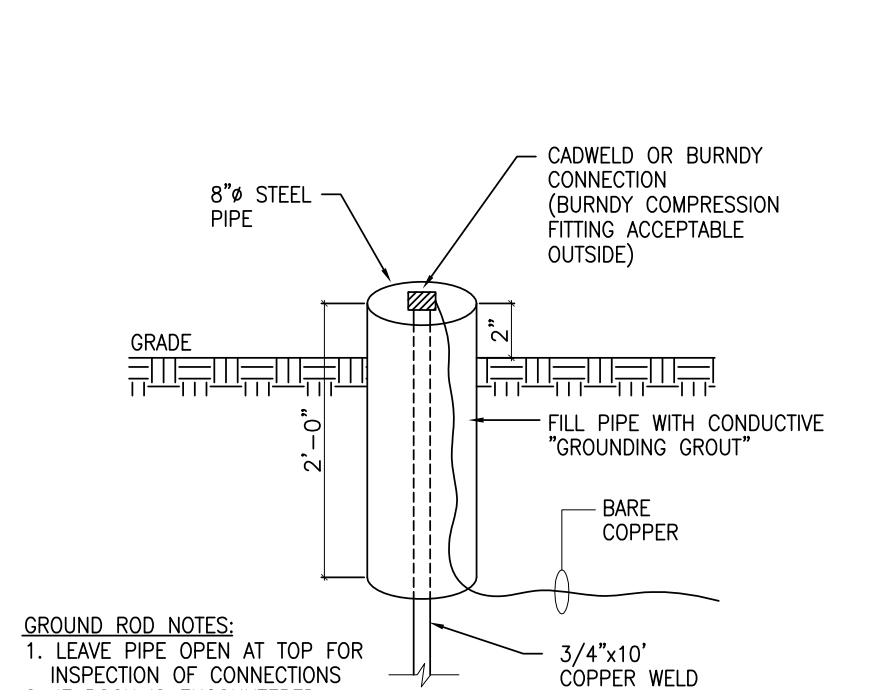


NEW LIGHT POLE INSTALLATION NOTES:
 1. ALL CABLES TO BE RUN IN 2" RIGID PVC UNDERGROUND PER OPSD 2101.01
 2. ALL DUCTING WHICH PASSES UNDER LOT TO BE CONCRETE ENCASED (SEE DETAIL THIS DRAWING)
 3. ENSURE POLE AND FIXTURE FIT PRIOR TO ORDERING.



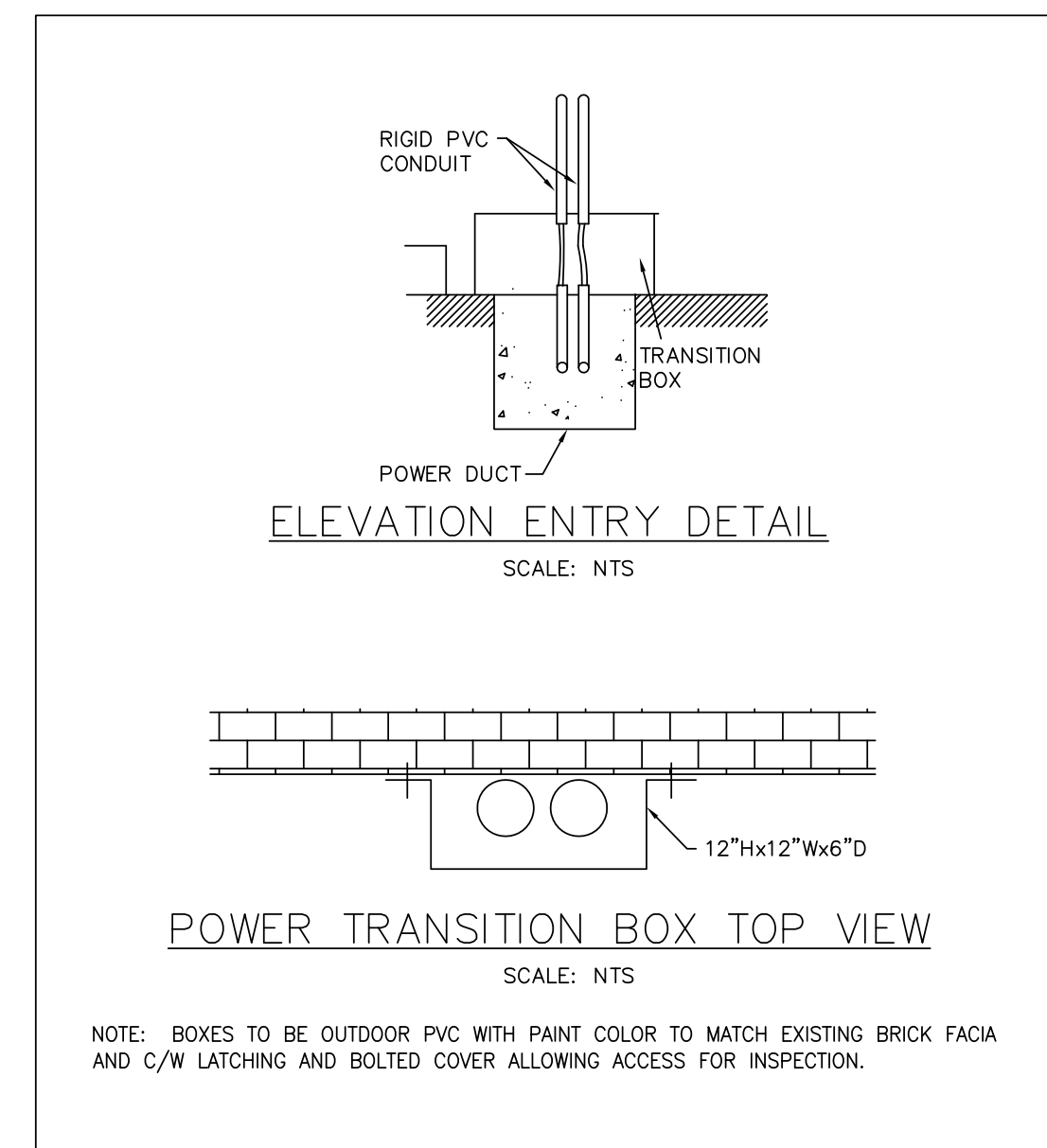
TRENCH PROFILE DETAIL
SCALE: NTS

NOTE: INSTALL PER DEC SECTION 12-012. CONCRETE ENCASEMENT REQUIRED FOR MECHANICAL PROTECTION IN VEHICULAR AREAS.



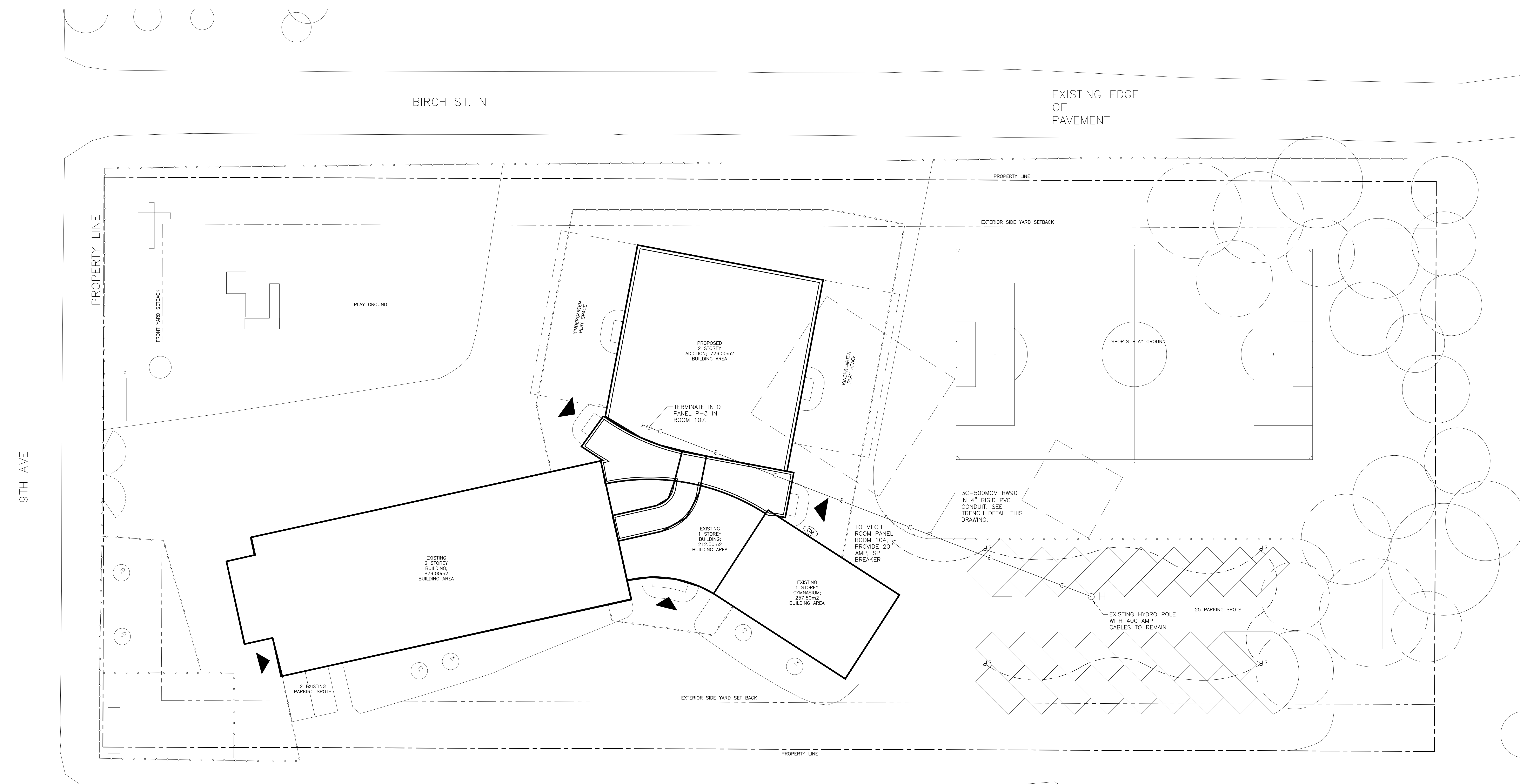
TYPICAL GROUND ROD DETAIL
SCALE: NTS

GROUND ROD NOTES:
 1. LEAVE PIPE OPEN AT TOP FOR INSPECTION OF CONNECTIONS
 2. IF ROCK IS ENCOUNTERED PLATE ELECTRODE TO BE INSTALLED AS PER DEC 10-702



ELEVATION ENTRY DETAIL
SCALE: NTS
POWER TRANSITION BOX TOP VIEW
SCALE: NTS

NOTE: BOXES TO BE OUTDOOR PVC WITH PAINT COLOR TO MATCH EXISTING BRICK FACIA AND C/W LATCHING AND BOLTED COVER ALLOWING ACCESS FOR INSPECTION.



LEGEND
 ○ S LIGHT STANDARD TO BE SINGLE HEAD LED C/W 6m STEEL POLE AND CONCRETE POLE BASE. SEE LIGHTING FIXTURE SCHEDULE.

REV	DESCRIPTION	DATE
4	REVISED FOR ACCENDUM #2	17.06.21
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUES FOR CLIENT REVIEW	17.05.08
1	ISSUES FOR CLIENT REVIEW	17.04.28

PROFESSIONAL ENGINEER
 JOHN R. HAMALAINEN
 2017
 REG. NO. 10000
 REG. PROVINCE OF ONTARIO

BORTOLOTTO
 PROJECT NUMBER: R121
 DATE: 17.05.17
 SCALE: 1:500
 DRAWN BY: GR

SITE PLAN
 MECH./ELEC.
 ME-1.1

Digital Controller Points List

Point Description	Analog Input	Binary Input	Analog Output	Binary Output	Alarm Point*	Non-DDC Point**	Other (specify)	Notes
Main Boiler Room	X							BAS
Outside Air Sensor #1								Boiler Controller
Outside Air Sensor #2	X							BAS
Outside Air Sensor #1 Fail					X			Boiler Controller
Outside Air Sensor #2 Fail					X			Boiler Controller
BAS Enable Boilers			X					Boiler Controller
Boiler #1 SWT	X							Boiler Controller
Boiler #1 Circulator Start Stop (P-5)			X					Boiler Controller
Boiler #1 Circulator status (P-5) (Current Sensor)		X			X			Boiler Controller
Boiler #1 Circulator Alarm (P-5)				X	X			Boiler Controller
Boiler #1 Enable - Disable			X					BAS
Boiler #1 Burner Status	X							Boiler Controller
Boiler #1 Target Firing Rate								Boiler Controller
Boiler #1 Actual Firing Rate								Boiler Controller
Boiler #1 Inlet Water Temp								Boiler Controller
Boiler #1 Outlet Water Temperature								Boiler Controller
Boiler #1 Stack Temp.								Boiler Controller
Boiler #2 SWT	X							Boiler Controller
Boiler #2 Circulator Start Stop			X					Boiler Controller
Boiler #2 Circulator status		X						Boiler Controller
Boiler #2 Circulator Alarm (P-6)				X	X			Boiler Controller
Boiler #2 Enable - Disable			X					BAS
Boiler #2 Burner Status	X							Boiler Controller
Boiler #2 Target Firing Rate								Boiler Controller
Boiler #2 Actual Firing Rate								Boiler Controller
Boiler #2 Inlet Water Temp								Boiler Controller
Boiler #2 Outlet Water Temperature								Boiler Controller
Boiler #2 Stack Temp.								Boiler Controller
Boiler #3 SWT	X							Boiler Controller
Boiler #3 Circulator Start Stop			X					Boiler Controller
Boiler #3 Circulator status		X						Boiler Controller
Boiler #3 Circulator Alarm (P-7)				X	X			Boiler Controller
Boiler #3 Enable - Disable			X					BAS
Boiler #3 Burner Status	X							Boiler Controller
Boiler #3 Target Firing Rate								Boiler Controller
Boiler #3 Actual Firing Rate								Boiler Controller
Boiler #3 Inlet Water Temp								Boiler Controller
Boiler #3 Outlet Water Temperature								Boiler Controller
Boiler #3 Stack Temp.								Boiler Controller
Heating Supply Water Temperature #1	X				X			Boiler Controller
Heating Supply Water Temperature #2	X				X			BAS
Heating Return Water Temperature Zone #1	X							BAS
Heating Return Water Temperature Zone #2	X				X			BAS
Heating Return Water Temperature Common	X				X			BAS
Perimeter Heating Pump P05 Enable/Disable			X					BAS
Perimeter Heating Pump P05 Status		X						BAS
Perimeter Heating Pump P05 Alarm					X			BAS
Perimeter Heating Pump P06 Enable/Disable			X					BAS
Perimeter Heating Pump P06 Status		X						BAS
Perimeter Heating Pump P06 Alarm					X			BAS
DHW Tank Temp	X							Boiler Controller
DHW Priority Call for Heat			X					Boiler Controller
DHW Pump 11 Enable/Disable			X					Boiler Controller
DHW Pump 11 Status		X						Boiler Controller
Atrium Slab Heating Pump P07 Enable/Disable			X					BAS
Atrium Slab Heating Pump P07 Status		X						BAS
Atrium Slab Heating Pump P07 Alarm					X			BAS
HVAC Unit #1 Energize Blower		X						
HVAC Unit #1 Return Air Temp.	X							
HVAC Unit #1 Furnace Stage 1		X						
HVAC Unit #1 Furnace Stage 2		X						
HVAC Unit #1 Cooling (Comp)		X						
HVAC Unit #1 Compressor Status			X					
HVAC Unit #1 Dirty Filter		X						
HVAC Unit #1 Fault (Alarm)				X				
HVAC Unit #2 Energize Blower		X						
HVAC Unit #2 Return Air Temp.	X							
HVAC Unit #2 Furnace Stage 1		X						
HVAC Unit #2 Furnace Stage 2		X						
HVAC Unit #2 Cooling (Comp)		X						
HVAC Unit #2 Compressor Status			X					
HVAC Unit #2 Dirty Filter		X						
HVAC Unit #2 Fault (Alarm)				X				
HVAC Unit #3 Energize Blower		X						
HVAC Unit #3 Blower Status			X					
HVAC Unit #3 Return Air Temp.	X							
HVAC Unit #3 Furnace Stage 1		X						
HVAC Unit #3 Furnace Stage 2		X						
HVAC Unit #3 Cooling (Comp)		X						
HVAC Unit #3 Compressor Status			X					
HVAC Unit #3 Dirty Filter		X						
HVAC Unit #3 Fault (Alarm)				X				
HVAC Unit #4 Energize Blower		X						
HVAC Unit #4 Blower Status			X					
HVAC Unit #4 Return Air Temp.	X							
HVAC Unit #4 Furnace Stage 1		X						
HVAC Unit #4 Furnace Stage 2		X						
HVAC Unit #4 Cooling (Comp)		X						
HVAC Unit #4 Compressor Status			X					
HVAC Unit #4 Dirty Filter		X						
HVAC Unit #4 Fault (Alarm)				X				
HVAC Unit #1 CO	X							
HVAC Unit #1 Fresh Air Damper		X						
HVAC Unit #1 Economizer								
HVAC Unit #2 CO	X							
HVAC Unit #2 Fresh Air Damper		X						
HVAC Unit #2 Economizer								
HVAC Unit #3 CO	X							
HVAC Unit #3 Fresh Air Damper		X						
HVAC Unit #3 Economizer								

Digital Controller Points List

Point Description	Analog Input	Binary Input	Analog Output	Binary Output	Alarm Point*	Non-DDC Point**	Other (specify)	Notes
Ventilation								
Outside Air Sensor #1								
Outside Air Sensor #2	X							
Outside Air Sensor #1 Fail					X			
Outside Air Sensor #2 Fail					X			
ERV Schedule								Program
Pump P01 Enable - Disable				X				
Pump P01 Status		X						
Pump P01 Alarm					X			
Pump P02 Enable - Disable				X				
Pump P02 Status		X						
Pump P02 Alarm					X			
Pump P03 Enable - Disable				X				
Pump P03 Status		X						
Pump P03 Alarm					X			
Pump P04 Enable - Disable				X				
Pump P04 Status		X						
Pump P04 Alarm					X			
Glycol Supply Temperature T1	X							
Glycol Supply Temperature T2	X							
Glycol Return Temperature	X							
Modulating Valve Set Point			X					
Modulating Valve % Opened	X							
ERV Supply Fan Enable/Disable					X			
ERV Supply Fan Status		X						
ERV Supply Fan Alarm					X			
ERV Supply Fan Speed Control				X				
ERV Supply Fan Speed Reference	X							
ERV Exhaust Fan Enable/Disable					X			
ERV Exhaust Fan Status		X						
ERV Exhaust Fan Alarm					X			
ERV Exhaust Fan Speed Control				X				
ERV Exhaust Fan Speed Reference	X							
Return Air CO2 Level	X							
Return Air Temperature	X							
Exhaust Air Temperature	X							
Supply Air Temperature	X							
Supply Air Humidity	X							
Outside Air Humidity	X							
Exhaust Air Damper Open - Close				X				
Exhaust Air Damper Open End Switch				X				
Exhaust Air Damper Closed End Switch		X						
Outside Air Damper Open-Closed		X			X			
Outside Air Damper End Switch		X						

Tag	Manufacture	Model	Capacity	Static Pressure	Electrical	Comments
EF-1	Solar & Palau	FF100	100	1/8" WC	120V SP 1.1 Amps	C/W Time Delay off Switch & Back Draft Damper
EF-2	Solar & Palau	FF200	200	1/8" WC	120V SP 1.8 Amps	C/W Time Delay off switch & Back Draft Damper
EF-3	Solar & Palau	FF250	245	1/8" WC	120V SP 2.1 Amps	IAN Room Controlled by Honeywell T853 Cooling Thermostat
EF-4	Solar & Palau	TD100XS	110	1/8" WC	120V SP 23 Watts	C/W Backdraft Damper & Time Delay Switch (2) Wired in Parallel

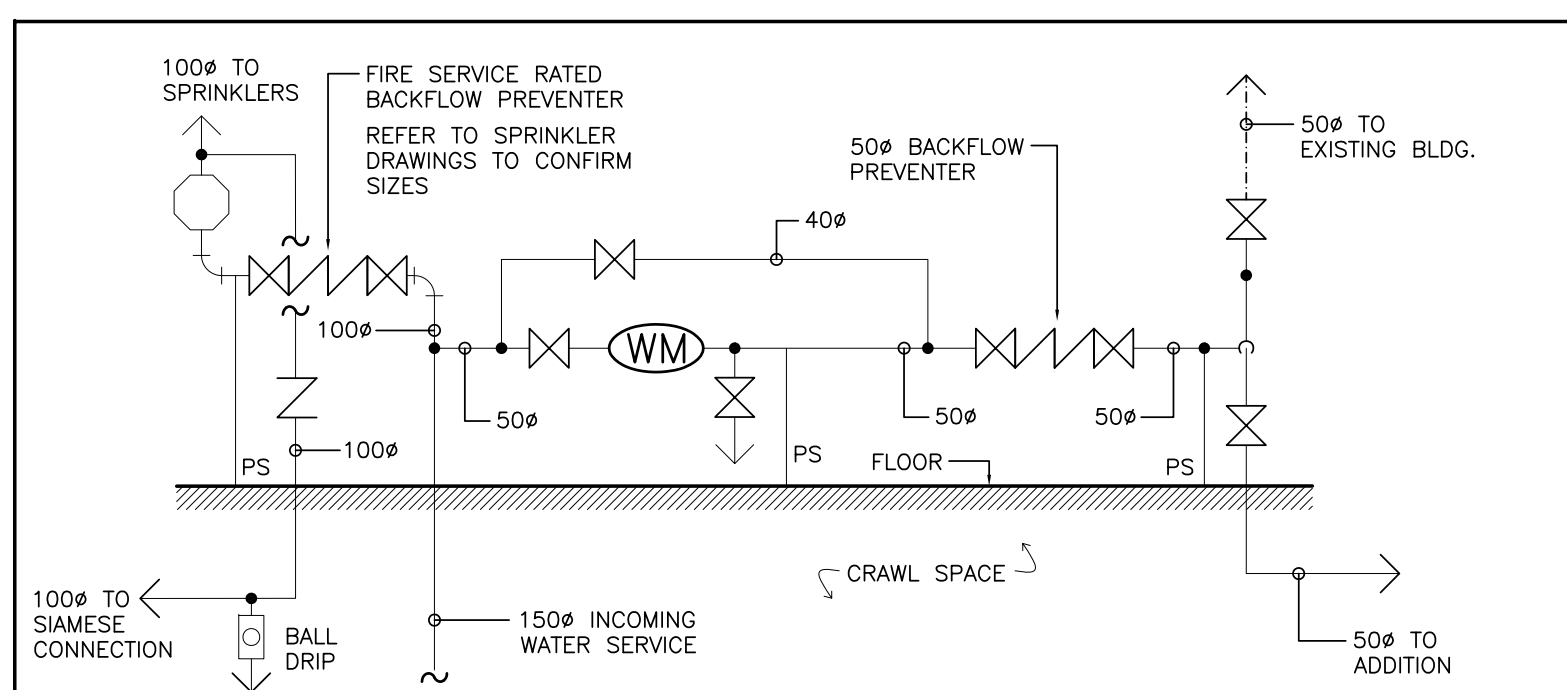
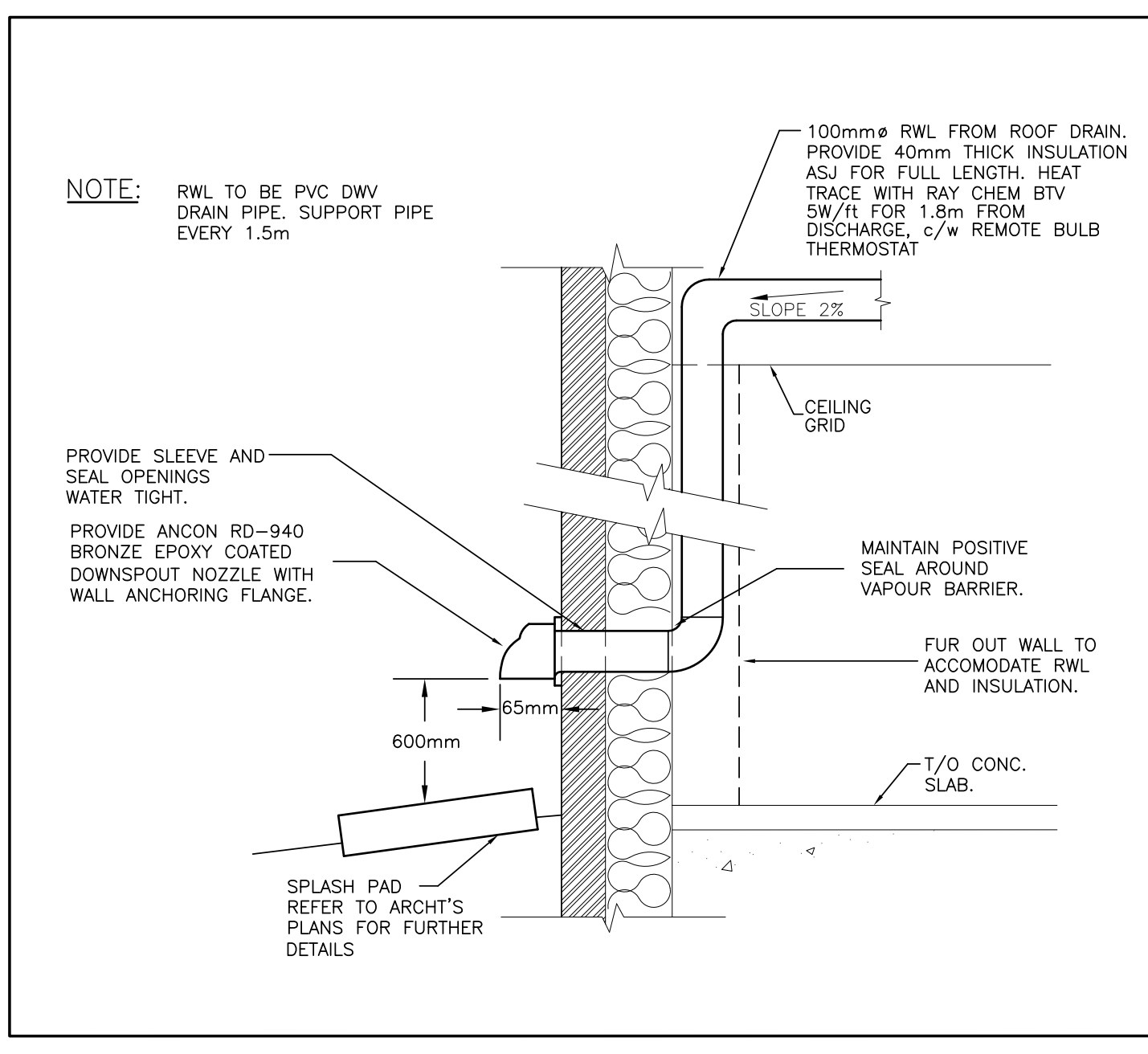
TYPE	ENCLOSURE	MODEL BY MOORE	DESCRIPTION	CONDITIONS	OUTPUT	ELECTRICAL	Comments
A	IS-24-4K	EP-153-C-3TR	1/4" SLOPING TOP	16FT ANGT	1640	N/A	Wall Hung Bottom Inlet

TYPE	Model By Modene	BLOWER CAPACITY	Description	Conditions	RTU/HR	ELECTRICAL	Comments
CUH01	COB-D-7-A-D-B-L-2.3-1.4-1-0	30CFM/39CFM	WALL MOUNTED	307 WTD, 6.2 USGPM 14071 EWT	62340/29400	120 Volt Single Phase	Two Stage Blower, PSC motor with plug connector.
CUH02	COB-S-8-A-B-L-2.3-1.4-0-0	35CFM/34CFM	CEILING MOUNTED	307 WTD, 2.4 USGPM 14071 EWT	16700/30710	120 Volt Single Phase	Two Stage Blower, PSC motor with plug connector.
CUH03	HC-2-4.3-B-0-1.5-A	370CFM	HUNG FROM CEILING	307 WTD, 1.30P/PA 14071 EWT	113370	120 Volt Single Phase	Horizontal Unit Heater

Tag	Manufacture	Model	Natural Gas Input	Net IBR Rating	Efficiency	Comments
801	Triangle Tube	CPS 1200	1,197,000 Btu/hr.	34 Boiler Horse Power	95%	complete with 3 Prestige Solo 399 Boilers; 3 Boiler Manifold (4" piping) & Structural Support with concrete anchors; 4" Low Loss heater; Flexible Stainless Steel Connectors; BACNET IP Modules; Low Water Cut-off & High Temperature limit manual reset & fittings; Stainless Steel Concentric Vent/Air Side Wall kit for 2 pipe CPVC System; 3 Boiler Common Vent Boiler kit; Horizontal Common Vent Termination. Contractor is to pay all costs for Factory Trained Technician for Start up and Commissioning of the System, which is to include coordination with Building Automation System for Integration of Graphics.

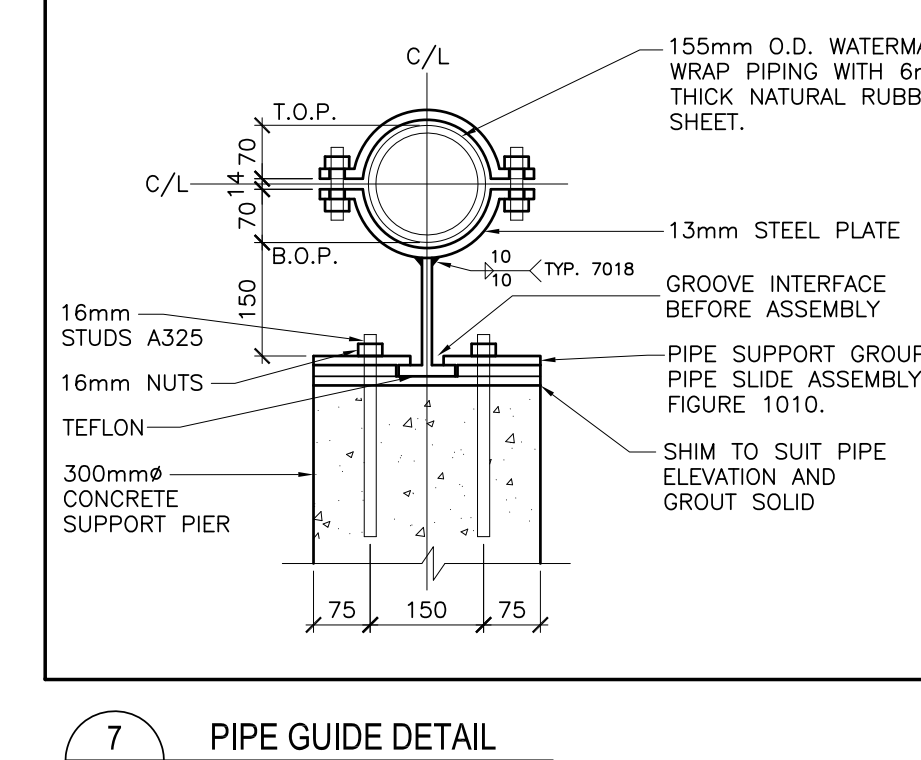
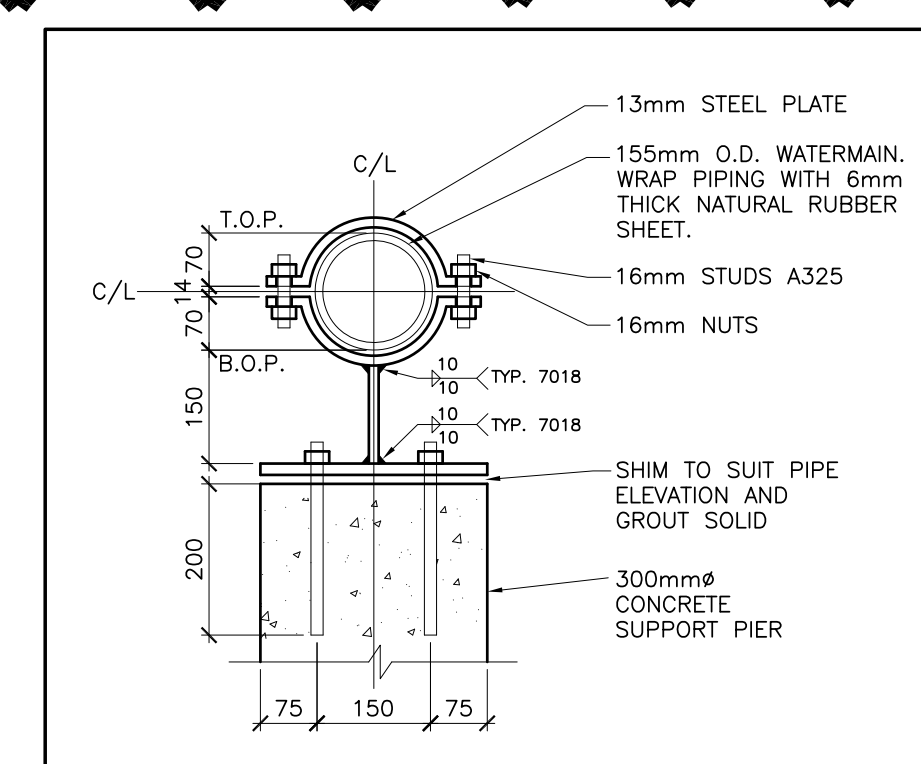
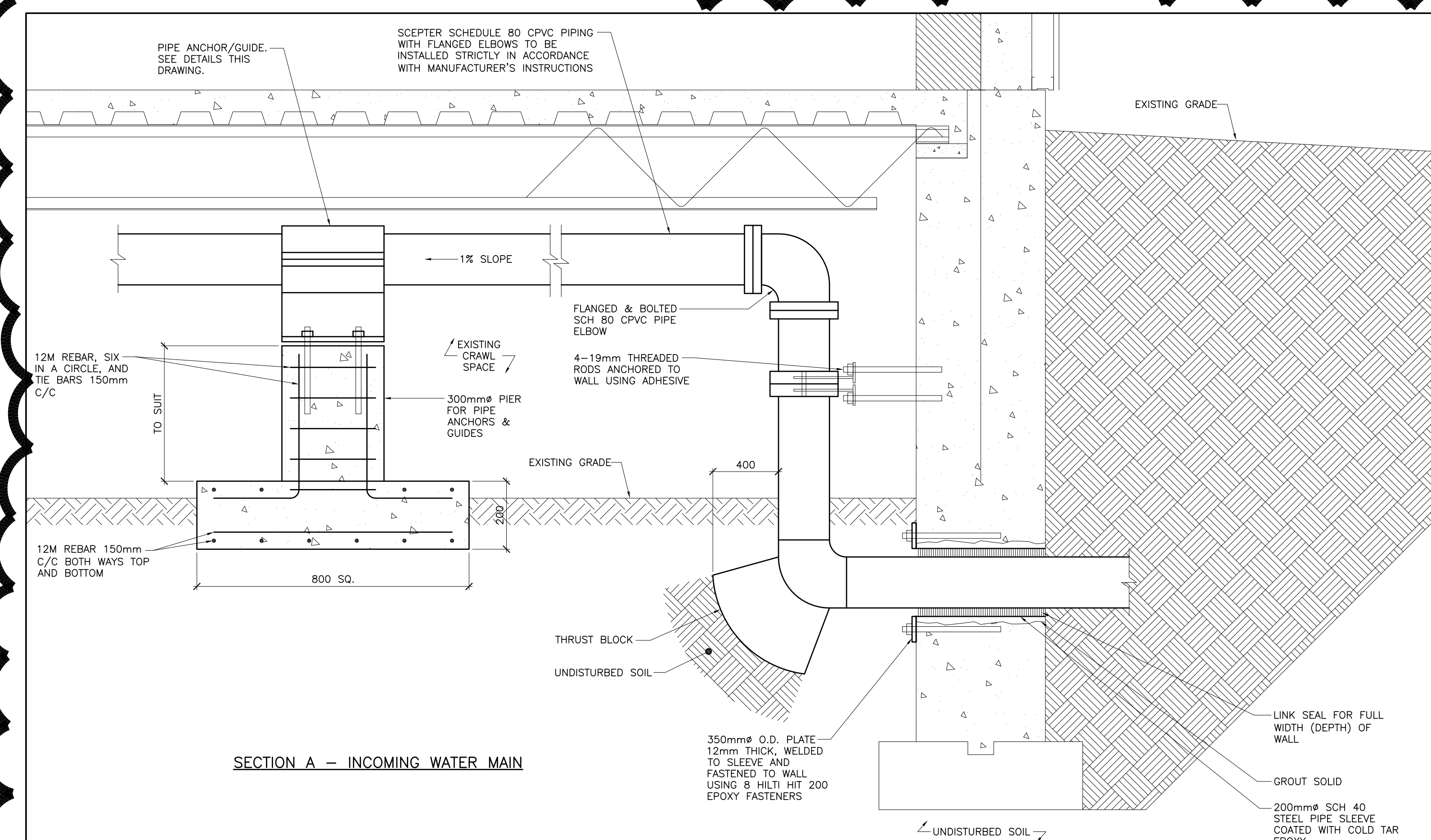
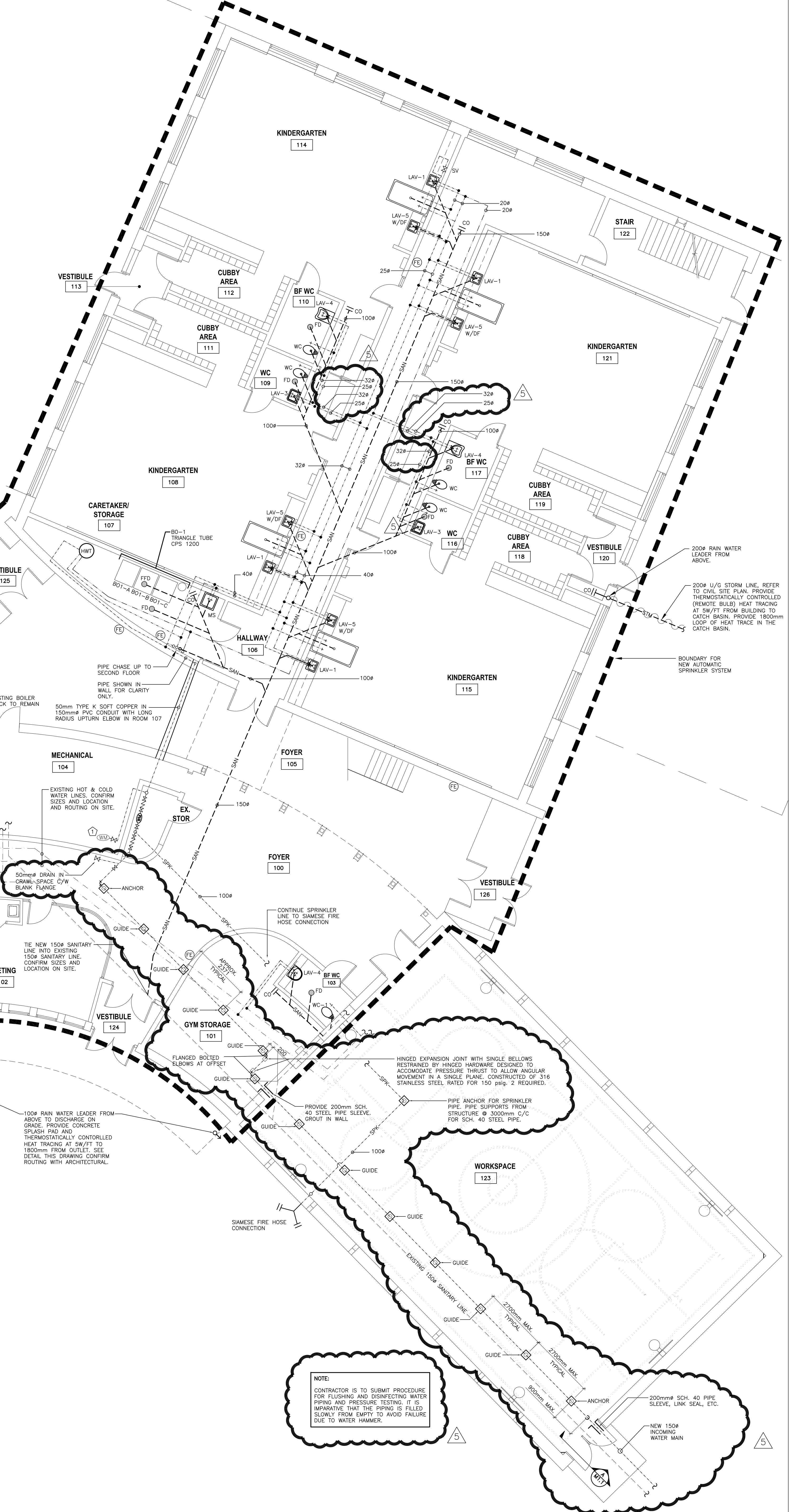
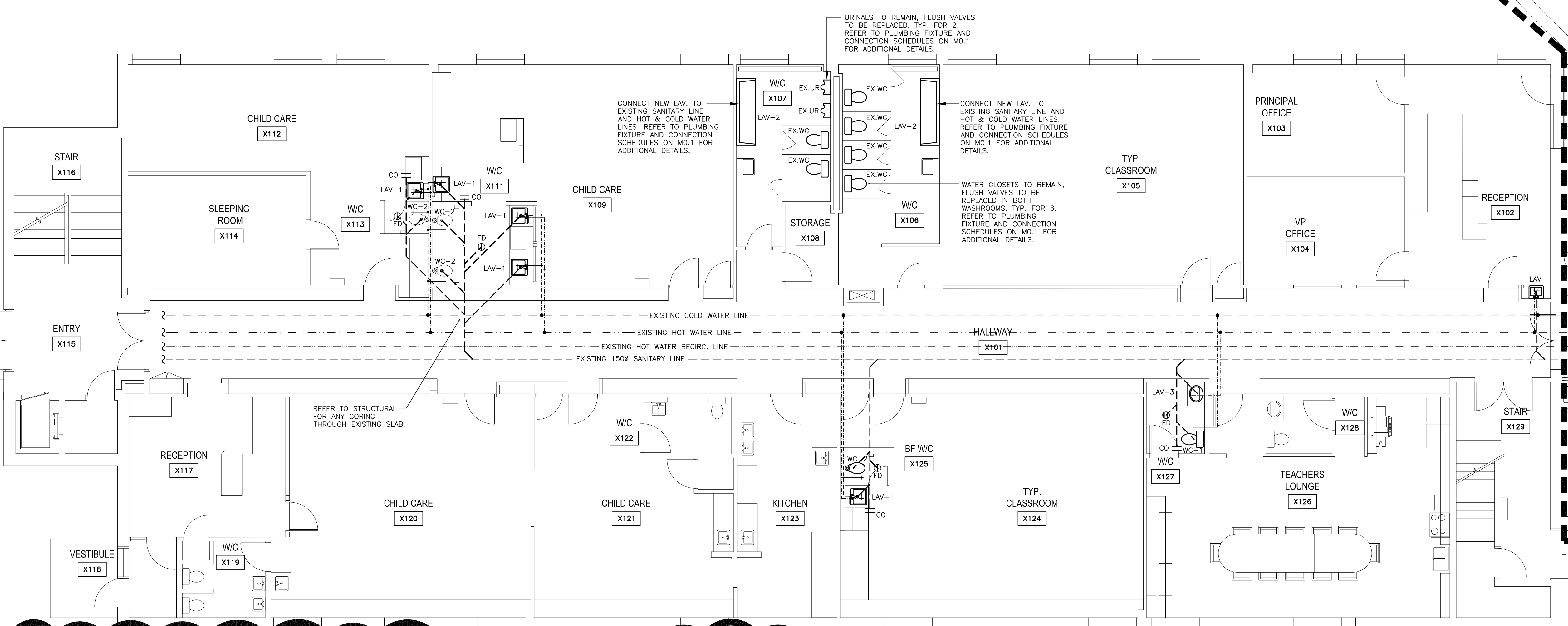
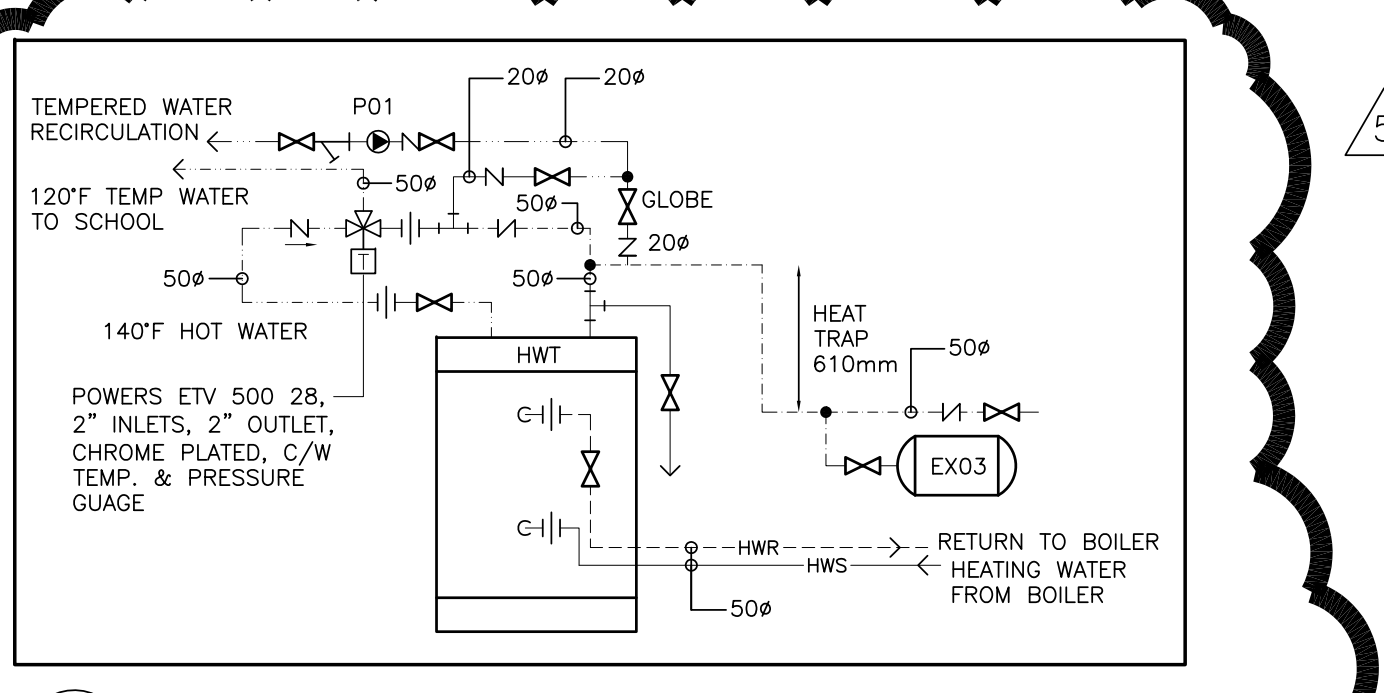
Tag No.	LOCATION	HEAT TRANSFERRED BTU/H	FLUID	FLOW (USGPM)	ET °F	LT °F	ΔP PSI	TYPE	NOTES:					
HE-1	BOILER ROOM ADDITION	340,000	WATER	34.9	170	150	4.916	50% P.G.	25.1	130	160	2.692	ASME	ALLOY 316, OPERATING WEIGHT 65LBS, 5.65" X 7.52" X 24"
HE-2	EXIST. BOILER ROOM	80,000	WATER	10	170	150	4.916	50% P.G.	12	130	160	2.692	ASME	ALLOY 316, OPERATING WEIGHT 65LBS, 5.65" X 7.52" X 24"

Tag No.	LOCATION	Serving	Model by Wilo	Type	FLUID	FLOW (USGPM)	Head (feet)	Pipe Connections	Motor Type & Electrical	NOTES:
P01	BOILER ROOM ADDITION	Heat Exchanger	Stratos - 1.25- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP, 230 Volt, Single Phase; 200 Watts max ECM	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal impregnated carbon bearing, Delta p-v Pressure Differential Variable, Factory set
P02	BOILER ROOM ADDITION	Heat Exchanger	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP, 230 Volt, Single Phase; 200 Watts max ECM	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal impregnated carbon bearing, Delta p-v Pressure Differential Variable, Factory set
P03	BOILER ROOM ADDITION	Rooftop Energy Recovery Unit	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	50% P.G.	35	20	1 1/4" Flanged Non-ANSI	1/4 HP, 230 Volt, Single Phase; 200 Watts max ECM	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal impregnated carbon bearing, Delta p-v Pressure Differential Variable, Factory set
P04	BOILER ROOM ADDITION	Rooftop Energy Recovery Unit	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	50% P.G.	35	20	1 1/4" Flanged Non-ANSI	1/4 HP, 230 Volt, Single Phase; 200 Watts max ECM	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal impregnated carbon bearing, Delta p-v Pressure Differential Variable, Factory set
P05	BOILER ROOM ADDITION	Addition Hydronic Heating	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP, 230 Volt, Single Phase; 200 Watts max ECM	



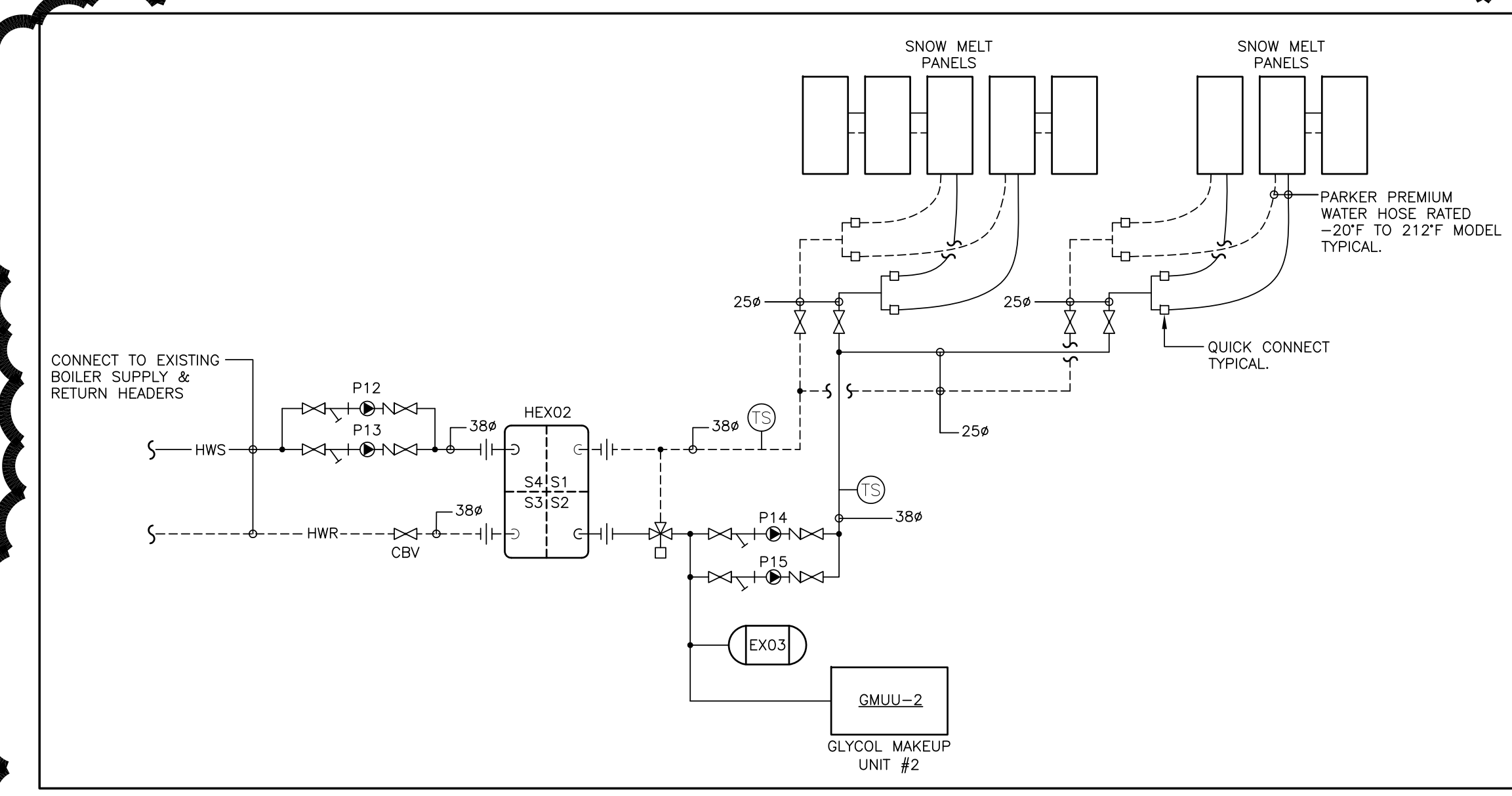
NOTES

- EXISTING WATER METER TO BE REMOVED. EXISTING PLUMBING SERVICES TO EXISTING SCHOOL TO REMAIN. EXTEND 50mm CW TO NEW METER IN STORAGE ROOM 104A.
- CONTRACTOR TO CONFIRM LOCATION OF ALL EXISTING PLUMBING PIPING ON SITE AND ADJUST LAYOUT TO SUIT.
- RECESSED FIRE EXTINGUISHER CABINET C/W EXTINGUISHER. CONSULT WITH LOCAL FIRE DEPARTMENT TO DETERMINE EXACT NUMBERS AND LOCATIONS.

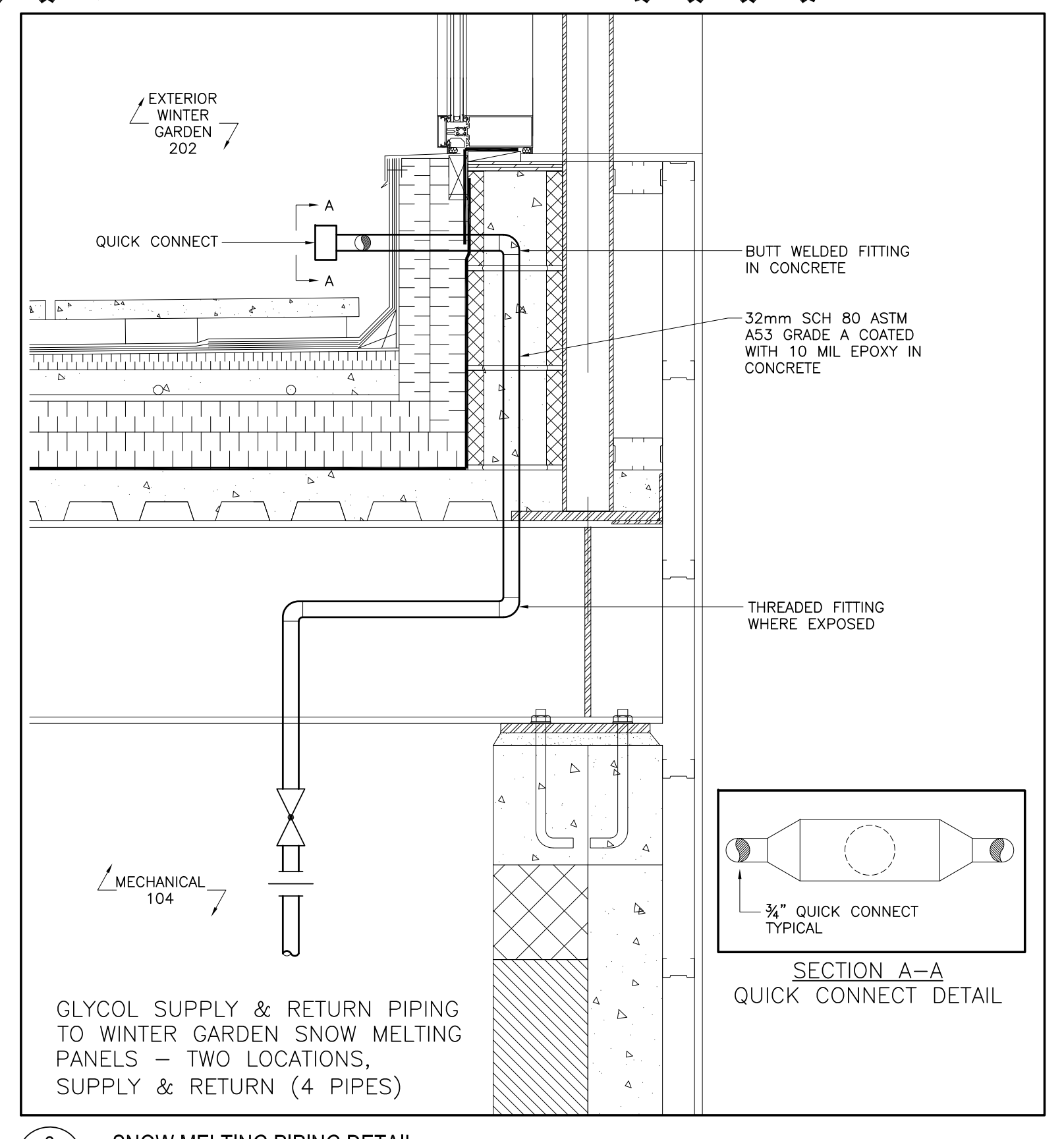


NOTE:
CONTRACTOR IS TO SUBMIT PROCEDURE FOR FLUSHING AND DISINFECTING WATER PIPING AND PRESSURE TESTING. IT IS IMPERATIVE THAT THE PIPING IS FILLED SLOWLY FROM EMPTY TO AVOID FAILURE DUE TO WATER HAMMER.

REV	DESCRIPTION	DATE
5	REVISED FOR ADDENDUM #2	17.06.21
4	REVISED FOR ADDENDUM #1	17.06.19
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUES FOR CLIENT REVIEW	17.05.18
1	ISSUES FOR CLIENT REVIEW	17.04.23



1 SNOW MELTING SCHEMATIC
N.T.S.



2 SNOW MELTING PIPING DETAIL
N.T.S.

SNOW MELTING PANELS SPECIFICATION:

- COMPLETE PACKAGE IS TO CONSIST OF MODULES WITH BUILT IN MANIFOLD, PEX PIPE, HEAT TRANSFER ALUMINUM PLATES, 16 GAUGE ALUMINUM COVER, RIGID HEAT TRANSFER BEAMS, 6" PRESSURE TREATED WOOD STRUCTURAL BASE, 7/8" PRESSURE TREATED PLYWOOD COVER, DRAINAGE 60 MIL COVERING. THE PANELS SHALL HAVE A MANIFOLD AT THE END FOR THE FIELD INSTALLED SUPPLY AND RETURN 5/8" PIPE TO BE INTO.
- EACH MODULE TO DELIVER 220 BTU/HR/FT² WITH A SUPPLY TEMPERATURE OF 160 F WITH 50% PROPYLENE. TOTAL OF X MODULES. 2 FT BY 10 PANELS SHALL BE PRESSURE TESTED AT 100 PSI FOR 24 HOURS PRIOR TO SHIPPING. PERFORMANCE SHALL BE TESTED TO ENSURE BTU/HR OUTPUT. TEST REPORT MUST BE SUBMITTED PRIOR TO SHIPPING. ALL MODULES SHALL HAVE A COMPLETE 15 YEAR WARRANTY ON ALL PARTS AND MATERIALS.

INSTALLATION OF SNOW MELTING PANELS SHALL CONSIST OF THE FOLLOWING:

- SNOW MELT SYSTEM MUST USE 5/8" NOMINAL POLYETHYLENE CROSS-LINKED (PEX) PIPING COMPLETE WITH UV STABILIZATION. PEX PIPE TO HAVE AN OPERATING TEMPERATURE OF 90°C (203°F) AND AN OPERATING PRESSURE OF 8 BAR (100 PSI). ONE LOOP (SUPPLY AND RETURN) SHALL BE INSTALLED PER PANEL FROM 2" COMMERCIAL STAINLESS STEEL MANIFOLD. EACH LOOP SHALL HAVE A FLOW BALANCING VALVE AND MANUAL SHUT OFF VALVE.
- PRESSURE TEST PIPE AT 80 - 100 PSI FOR A MINIMUM OF 24 HOURS PRIOR TO START UP.
- AERIAL SNOW/ICE SENSOR SHALL BE EQUAL TO TEKMAR 095 AND SHALL BE INSTALLED IN LOCATION SHOWN ON DRAWINGS. SENSOR SHALL COME WITH 50' OF CABLE TO BE WIRED BACK TO TEKMAR MODEL 654 CONTROLLER. THE TEKMAR 654 TO PROVIDE BLOWER ENABLE AND 0 TO 10 V CONTROL SIGNAL FOR BLOWER AND PUMP CONTROL. BMS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING.

SNOWMELT CONTROL

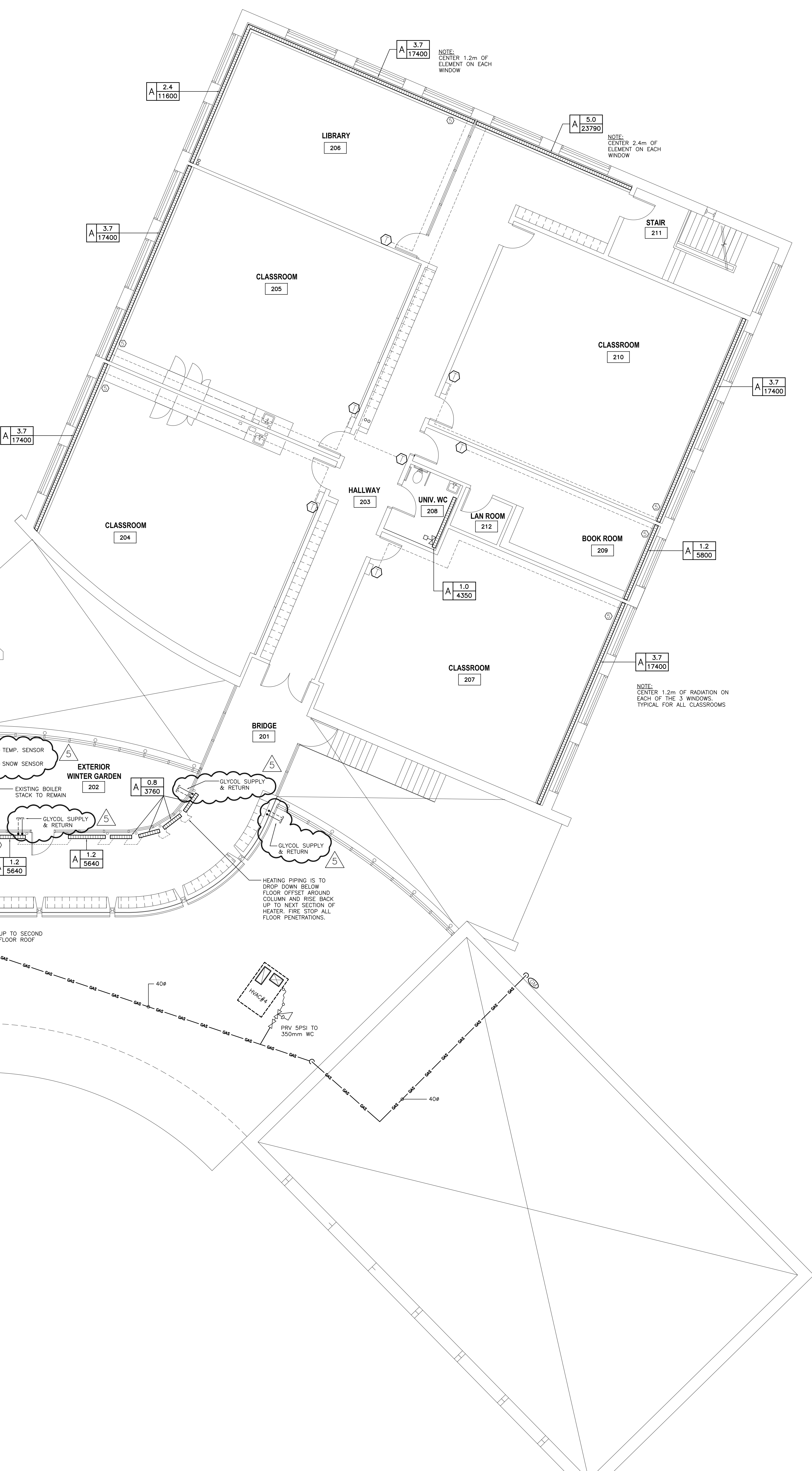
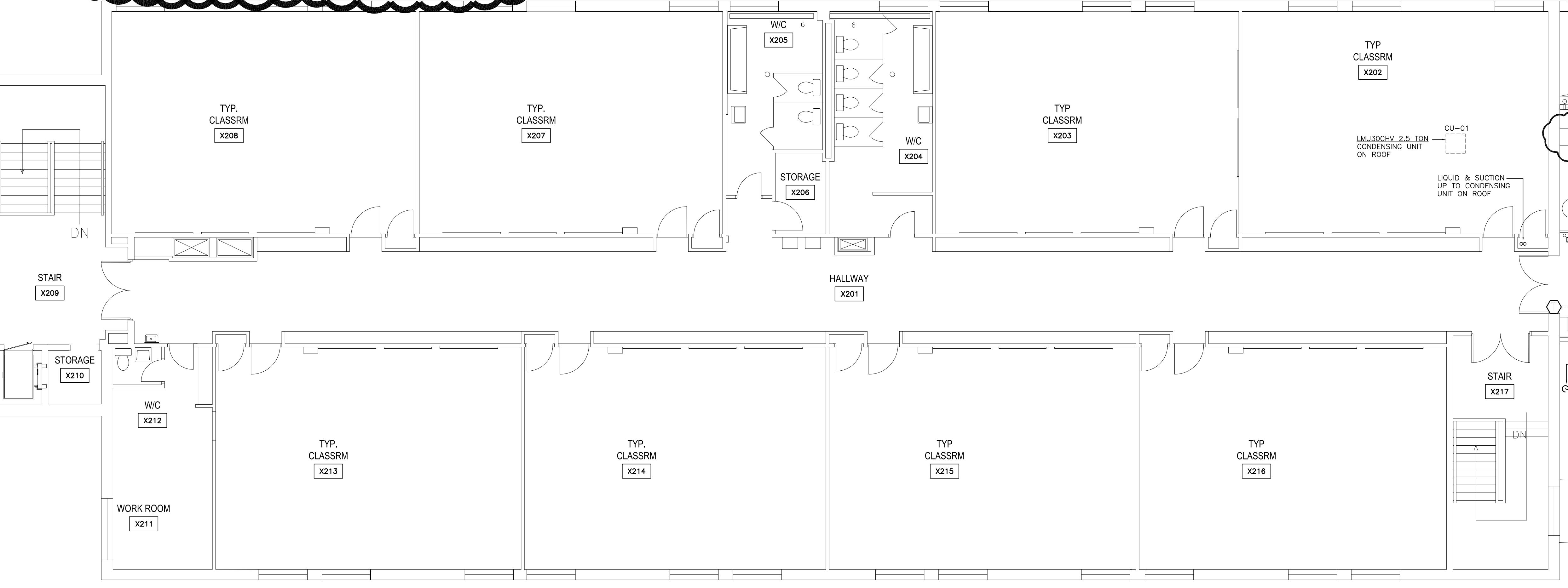
- PLEASE REFER TO ATTACHMENT FOR TEKMAR SNOWMELT CONTROL AND SNOW SENSOR SPECIFICATION. THE CONTROL SHALL BE CAPABLE OF INTERFACING WITH THE BMS, PROVIDE MINIMUM AND MAXIMUM MODULE TEMPERATURE, PROVIDE WARM WEATHER SHUT DOWN, ADJUSTABLE MELTING TEMPERATURE AND LCD DISPLAY SCREEN.
- THE ICE/SNOW DETECTOR SHALL SIGNAL THE CONTROLLER TO THE PRESENCE OF SNOW OR ICE AT SPECIFIC SELECTED SURFACE TEMPERATURE AND MOISTURE CONDITIONS, AS WELL AS READING TEMPERATURES, THE DETECTOR/SENSOR SHALL DETECT SURFACE WATER OR SNOW.

SYSTEM STARTUP, TESTING AND BALANCING

- ADD TO SLAB HEATING SYSTEM NO LESS THAN 50% GLYCOL/WATER MIXTURE FOR FREEZE PROTECTION AND SYSTEM CORROSION INHIBITOR.
- TEST CORROSION AND/OR ANTIFREEZE SOLUTION FOR PROTECTION LEVEL AND MAINTAIN RECORDS IN A MANUAL TO KEEP TRACK OF WATER QUALITY CONTROL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL NECESSARY ADJUSTMENTS TO FLOOR HEATING EQUIPMENT AND CONTROLS, AND THAT THE ENTIRE SYSTEM IS FULLY TESTED, BALANCED AND OPERATING AS PER SPECIFICATION AND MANUFACTURE RECOMMENDATIONS. THE ROOFING CONTRACTOR IS TO PROVIDE 1" OF MINERAL FIBREGLASS INSULATION INSTALLED BETWEEN THE ROOF MEMBRANE AND PANELS. INSTALLATION IS TO BE DONE TO THE APPLICABLE ASTM ROOFING STANDARDS.

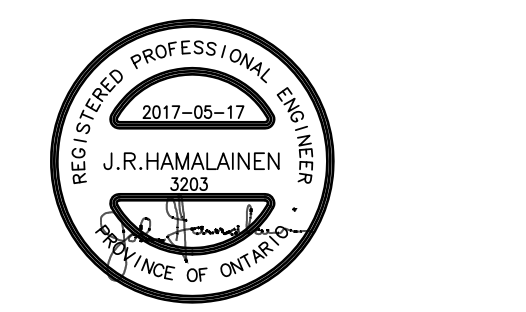
(CAPACITY SHALL NOT BE REDUCED TO BELOW 40%) DUE TO THE PSYCHOMETRIC PROPERTIES OF AIR, WITH AIR HAVING ONLY 5 GRAINS OF MOISTURE PER LB OF AIR AT -20, 000 F. SNOWFALL IS MINIMAL AT LOWER TEMPERATURES AND THE SNOW MELTING SYSTEM SHALL NOT FUNCTION BELOW 0 DEGREES F.

THESE PANELS WILL CONSIST OF WOOD FRAMED UNITS TO BE INSTALLED ON 1" STYROFOAM SM INSULATION THAT WILL BE FROM 10'X10' TO 12'X12' IN AREA WITH HYDRONIC PEX TUBING INSTALLED INSIDE. REFER TO PIPING SCHEMATIC ON DRAWING M2.4.



1 HEATING PIPING LAYOUT - SECOND FLOOR PLAN - RENO
1:75

REV	DESCRIPTION	DATE
5	REVISED FOR ADDENDUM #2	17.06.21
4	REVISED FOR ADDENDUM #1	17.06.19
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUES FOR CLIENT REVIEW	17.05.18
1	ISSUES FOR CLIENT REVIEW	17.04.23



BORTOLOTTO
PROJECT NUMBER: RHE 3023
DATE: 17.05.17
SCALE: 1/8"
DRAWN BY: BT

SECOND FLOOR PLAN - RENO
HEATING PIPING LAYOUT



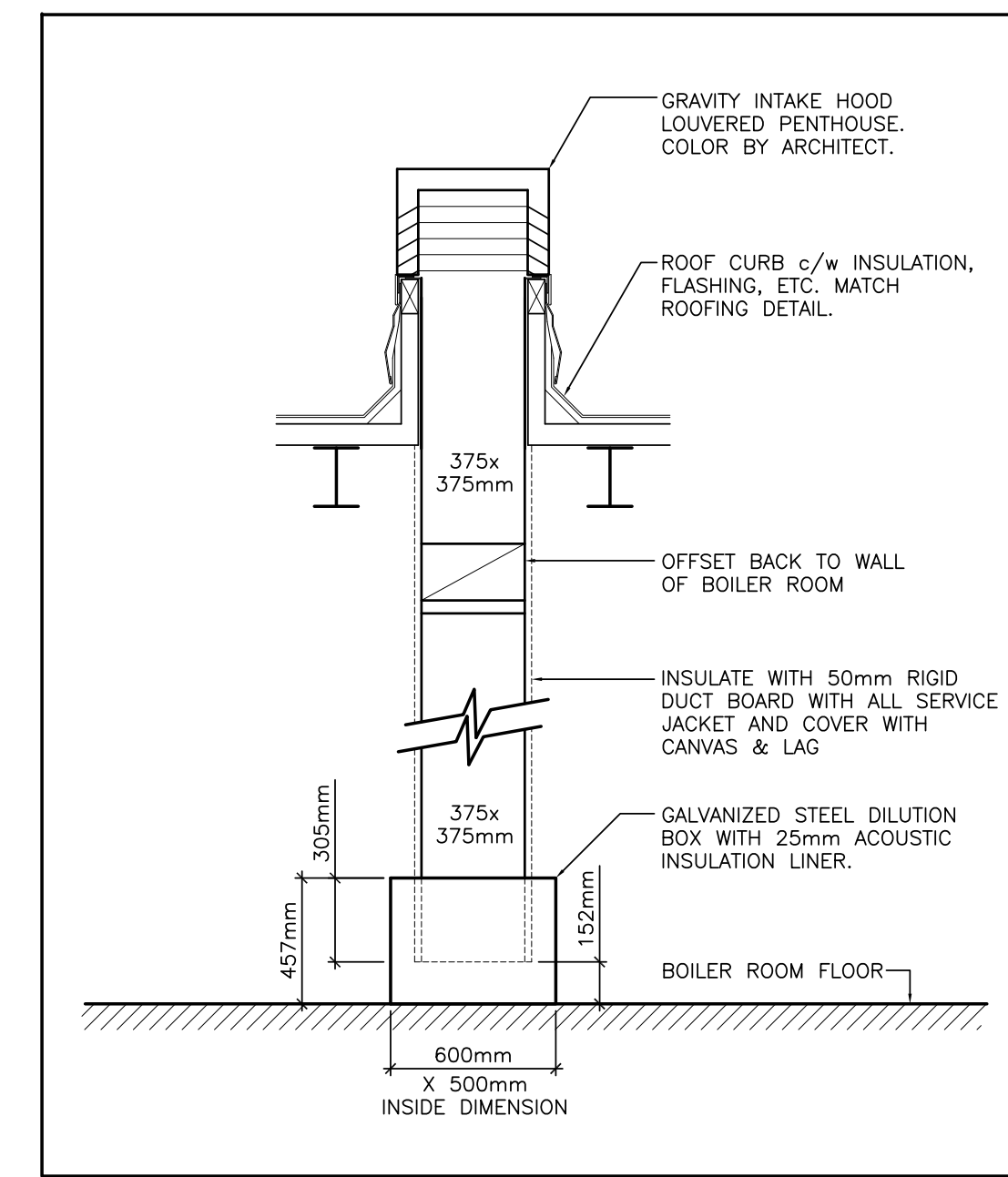
CONSULTANT TEAM

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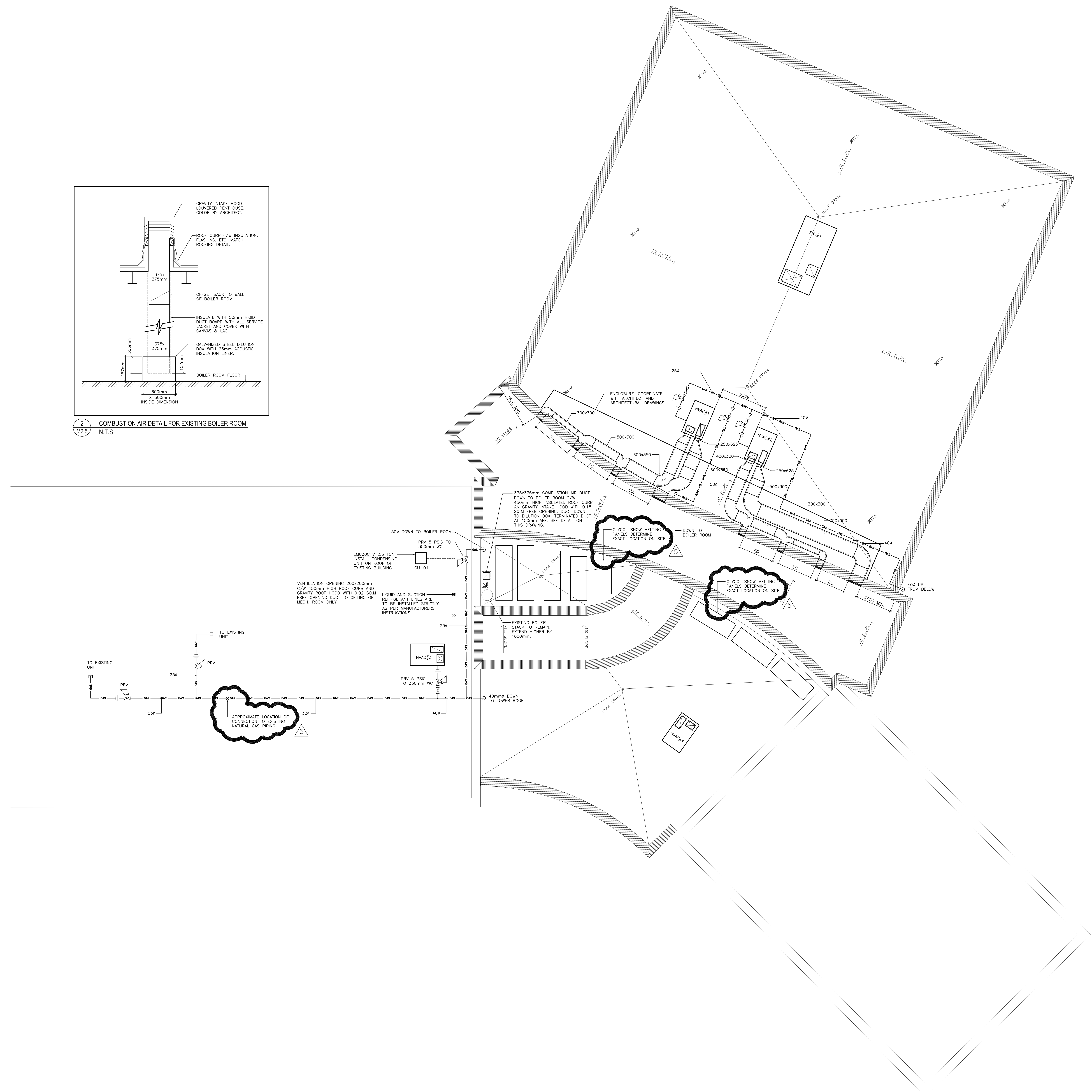
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2 COMBUSTION AIR DETAIL FOR EXISTING BOILER ROOM
N.T.S.



1 HVAC LAYOUT - ROOF PLAN
1:75

REV	DESCRIPTION	DATE
5	REVISED FOR ADDENDUM #2	17.06.17
4	REVISED FOR ADDENDUM #1	17.06.09
3	ISSUED FOR PERMITS & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28



BORTOLOTTO
PROJECT NUMBER: P1501
JRE 1203
DATE: 17.06.17
SCALE: 1:5
DRAWN BY: JD

ROOF PLAN
HVAC LAYOUT
M2.5