LADYSMITH

Parks, Recreation, & Culture

Invitation to Tender
No. 2023-PRC-06

Arts and Heritage Hub
ADDENDUM #5

For further information:
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Tender Issue Date:	Thursday, June 29, 2023
Addendum #1:	Thursday, July 6, 2023
Addendum #2	Thursday, July 31, 2023
Addendum #3	Thursday, August 10, 2023
Addendum #4	Monday, August 14, 2023
Addendum #5	Wednesday, August 16, 2023
Site Visit:	10:00 a.m., Friday, August 11, 2023
Tender Closing:	2:00 p.m., Thursday, August 24
Tender Opening:	2:15 p.m., Thursday, August 24, Ladysmith City Hall

Addendum #5: Invitation to Tender (ITT) No. 2023-PRC-06

Arts and Heritage Hub

This Addendum includes full-size drawings to supplement the existing tender documents.

Issued: August 16, 2023

This Addendum shall be read in conjunction with and considered as an integral part of the Invitation to Tender (ITT). Revisions supersede the information contained in the original ITT or previously issued Addendum. No consideration will be allowed for any extras due to any Proponents not being familiar with the contents of this Addendum. All other terms and conditions remain the same.

REVISIONS

INCLUDE attached 'Full Size Drawings to the ITT document.

End of Addendum #5

CHECKWITCH
POIRON
ARCHITECTS
INC

Tender Addendum TA005

Contractor Reference: None

Date 2023.08.14

Project 2032 LAHH

Client Town of Ladysmith

The following addendum supersedes information contained in drawings, specifications and any previous addenda for the project to the extent referenced. This Addendum forms part of the tender documents and is subject to all of the conditions set out in the contract conditions.

Full Size Drawings

1. Please see attached the full size drawings (24"x36") from Structural, Mechanical and Electrical Consultants. Please do not reduce drawing size as this will affect the legibility of the drawings.

Reason for Change: Trades request - legibility issues

Distribution List

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GENERAL

1. Read structural Drawings in conjunction with other related Drawings, including existing Drawings, for dimensions, elevations, roof and floor slopes, presence of openings and inserts, existing underground services, and existing mechanical/electrical elements.

2. Do not scale off of the Drawings or digital files. Written dimensions take precedent. Hard copy Drawings are the official documents for the Project and take precedence over digital files.

3. For Projects overseen by a Construction Manager or Design-Build Contractor in lieu of a General Contractor, references in all notes and specifications to "Contractor" shall apply to the relevant Subcontractor(s).

4. Where notes and specifications require submittals by a Professional Engineer, the Engineer must be licensed at the place where the Project is located.

5. Prior to commencement of Work, Contractor shall compare all related Drawings, confirm all dimensions, and field measure/confirm all existing conditions. Report any discrepancies to the Architect and Engineer of Record ("Consultant" henceforth).

6. If discrepancies relating to structural Work are found in the various documents, the more stringent provisions shall apply, unless approved by the Consultant. Specifications control over these Drawings and General Notes only where the Specifications provide for more stringent requirements. Contractor, suppliers, and subtrades are to ensure they are working with the "Issued for Construction" documents

7. Unsolicited alternative proposals and unsolicited substitutions of materials, structure, connections, or otherwise must be submitted with sketches and calculations sealed by a Professional Engineer. Alternative proposals and substitutions will require review by the Architect and Consultant. Such review will be undertaken on an additional fee basis, at the Contractor's cost, and does not guarantee acceptance of the alternative proposal(s).

8. Contractor is solely responsible for bracing the structure and all components during construction, including any underpinning of adjacent structures.

9. These Drawings show requirements for the completed structure only. Contractor is responsible for the design and inspection of falsework, shoring, and reshoring.

10. All shop drawing reviews by the Consultant constitute review for general concepts only. Review of submittals pertaining to structural work are reviewed for compliance with structural drawings only. Contractor shall incorporate comments from Consultants and provide a For Record Submittal which shall be used for completion of work on site. Review of contractor submittal does not waiver the contractor's responsibility to fulfil intent of the Contract Documents. Delegated design items are the responsibility of the contractor.

11. Do not cut or drill openings in any portion of the structure without written approval of the Consultant.

12. Design Loads:

a) Gravity Loads:

	Live Load	Superimposed Dead Loads
Roof Snow Load based on: Importance = 1.0 Normal	Ss = 2.4 kPa Sr = 0.4 kPa	0.5 kPa
Main Floor	4.8 kPa	1.5 kPa

Superimposed dead loads are non-structural dead loads including architectural topping, partitions (for LL<4.8 kPa), roofing material, pavers, ceiling finishes and mechanical/electrical conduits/fixtures.

b) Seismic and Wind Loads:

Seismic load based on:

Seismic Data							
T	0.2	0.5	1.0	2.0	5.0	10.0	PGA
Sa	1.10	1.02	0.587	0.353	0.110	0.039	0.482
Fa	0.907	1.107	1.217	1.277	1.345	1.315	

Importance = 1.0 Normal

Site Class C

Limited Ductility Braced Frames
Rd = 2.0 Ro = 1.3

Wind load based on: q 1/50 = 0.40 kPa
q 1/10 = 0.31 kPa
Importance = 1.0 Normal

13. These Drawings show structural Work required to meet the provisions of Part 4 of the BCBC.

14. All codes and documents referred to in these General Notes are to be the current adopted edition.

15. Design of secondary component items, including their attachment to the structure, is the responsibility of others. See "Secondary Components and Their Attachments" section of these General Notes.

16. Supply of Record Drawings is outside the scope of services.

CAST-IN-PLACE CONCRETE PILES

1. Design of cast-in-place straight shaft piles is based on the geotechnical report of July 19 2021 by Lewkowich Engineering Associates. Any interpretation of the geotechnical report by the Contractor is solely the responsibility of that contractor.

2. Piles have been designed for an allowable end bearing pressure of 310kPa and a factored end bearing pressure (ULS) of 775kPa. Pile capacity shall meet values shown in the Drawings.

3. Provide all labour, material, and equipment necessary to complete the piles for the foundation as indicated on the Drawings. The Work shall include the concrete, reinforcing steel, dowels, and removal of excavation material the Site.

4. All piling Work shall be performed by trained personnel with specific experience in the installation of cast-in-place concrete piles.

5. The Geotechnical Engineer shall provide or arrange for continuous inspection of the pile installation under his or her letter of assurance for the Project, at the Owner's expense. The Contractor is solely responsible to coordinate this Work with the Geotechnical Engineer. The Geotechnical Engineer shall submit reports to the Consultant and shall notify the Consultant if pile installation deviates from the Specifications and Drawings.

6. Install piles in accordance with the geotechnical report, including base preparation, minimum bearing depths, and other requirements. Drilling, shoring, minimum size of base, etc. are to be established with the Geotechnical Engineer on site prior to concrete placement.

7. Dewater as necessary to install piles, pile caps, and grade beams without causing erosion or subsidence of surrounding ground.

8. Drill shafts of diameter shown on the Drawings with power-driven augers to depths called for on the Drawings from the pile cut-off elevation. Use steel sleeves where soil is insufficiently stable during drilling and casting of concrete.

9. Reinforce all piles over their full height as shown on the drawings. Install and secure cage in such a manner to prevent loose earth or debris from falling into the hole. Maintain minimum cover to all pile reinforcement, including ties, as indicated on drawings.

10. Place reinforcing steel and concrete as soon as possible after drilling. Dewater all holes, whether sleeved or not, before casting concrete.

11. Thoroughly vibrate the concrete in the top three meters of each pile using mechanical vibrators.

12. Perform concrete material tests per "Field Review and Testing" section of these General Notes.

13. Maintain and submit accurate records of the pile installation. Provide written confirmation to the Consultant that the piles were installed in accordance with the requirements of the Drawings, instructions of the Geotechnical Engineer, and good work practice.

14. Tolerance for horizontal location of piles to be plus or minus 75mm (3") from the intended line and position. Tolerance for plumb to be 2% maximum slope of shaft, to be inspected by the Geotechnical Engineer on site prior to casting concrete. Tolerance for top elevation to be plus or minus 25mm (1"). Prior to proceeding with pile caps and grade beams, produce the Consultant with a survey of the existing pile positions, including any variations from intended position,

15. If pile installation is likely to affect nearby piles, defer until concrete in nearby piles has developed sufficient strength.

16. The "Cast-In-Place Concrete" and "Concrete Reinforcement" sections of these General Notes also apply to this Work.

FIELD REVIEW AND TESTING

1. The contractor is to submit a written request for structural review, including markup identifying structural items to review, with at least 48hrs notice, and allow 24hrs before concealment for an in-person review. It is the Engineer of Record's discretion whether the field review is required on-site or can be reviewed via photo evidence supplied by the contractor. The contractor is to complete their quality control review, and the work to be reviewed must be substantially complete before review by the Engineer of Record.

2. Field reviews performed by the Engineer of Record are intended to review structural work only and does not replace the requirement of a field review by a specialist engineer or temporary works engineer for other engineering work done by these consultants.

3. Field reviews are at the discretion of the Engineer of Record to ascertain general compliance to the other contract documents, including any sketches issued to the site during the construction phase. Field reviews do not make the Engineer guarantors of the contractors' work and may not form part of the contractor's quality control which shall remain the contractor's responsibility. Engineer of Record shall not be responsible for omissions of the contractor or failure to fulfil the intent of the Contract Documents. It is the contractor's responsibility to ensure the trades are in possession of any site sketches that may differ and/or alter information shown on the contract drawings.

4. Structural work covered prior to field review may require the removal of finishes, fireproofing, structure, or other trades to review the work. The cost of removal for observation purposes shall be at the contractor's expense. The instruction for required removal is at the discretion of the Engineer of Record.

5. Instructions given within the field review report shall not cause an additional cost beyond the contract documents. Work found defective after competition or concealment of the work or completion of the project shall remain the contractor's responsibility.

6. The Consultant reserves the right to charge an hourly rate for additional time spent reviewing incomplete work or work resulting in rejection of more than 5% of the work. This work shall be at the expense of the contractor.

7. Independent Testing Agency Review: The Owner shall appoint and pay for the services of independent, CCIL-certified testing agencies, subject to approval by the Consultant, for the items listed below. Testing agencies shall provide written reports of all test results to the Contractor and the Consultant.

a) Subgrade Density Testing: Test subgrade material immediately prior to installation of slab on grade components and during lifts as specified by the Geotechnical Engineer.

b) Concrete Materials Testing:

1) Perform compressive strength tests in accordance with CSA A23.2. Unless permitted by the Consultant, cast a minimum of four test cylinders for each 50 cubic meters or each day's pour, whichever is less, for each mix. Test one at seven days, one at 14 days, and two at 28 days. (For concrete with more than 25% supplementary cementing materials, cast a minimum of five cylinders. Test one at seven days, one at 14 days, one at 28 days, and two at 56 days). Test reports shall identify the locations where concrete is being tested, with gridlines and elevations.

2) Perform slump tests and air content tests in accordance with CSA A23.2 for each concrete test.

3) Submit concrete test results maximum 48 hours after test.

c) Steel Testing:

1) Inspect and test all shop- and field-bolted connections according to CSA S16.

2) Inspect all structural steel welds to the following criteria:
(a) Visually inspect 100% of all shop and field welds.
(b) Magnetic particle test 15% of all field fillet welds.
(c) Ultrasonic test 100% of all shop and field complete penetration (CP) welds.

3) Visually inspect all steel deck fasteners.

4) In addition to the Fabricator's in-house quality control testing of stud rail fusion machine welds, perform in-shop visual inspection of all stud rail assemblies, and provide bend tests or tension tests of fabricated assemblies per ASTM A370 and AWS D1.1, Section 7.3.2 and Figure 7.2. Test a minimum of 2% of the total stud rail assemblies of each type, subject to confirmation and approval of the Consultant. Test each stud within the rails selected for testing.
(a) Stud rails used for testing are not permitted to be used in the structure.
(b) Submit test results prior to concrete placement.

g) Adhesive Anchors: Perform in-situ proof load tests of adhesive anchors where indicated on the Drawings and where Contractor has substituted adhesive anchors for cast-in anchors (with Consultant's written permission. Proof load shall be manufacturer's published anchor capacity. If any anchors fail proof load testing, additional tests are required at the discretion of the Consultant, at the Contractor's expense.

8. Additional testing and field review resulting from rejection of more than 5% of the Work will be at Contractor's expense.

CAST-IN-PLACE CONCRETE

1. Perform all Work in accordance with CSA A23.1 and Specification Sections 03 10 00, 03 20 00, and 03 30 00.

2. Mix Designs: Concrete is specified according to the performance method per CSA A23.1 Table 5.
a) All cement shall conform to CSA A3001. Provide Type GU, u.n.o. Provide Type HS for concrete in contact with sulfate soils. Other types require written approval of the Consultant.
b) No calcium chloride is permitted in any form in the concrete mixes.
c) Normal weight concrete for various purposes shall be as follows:

ELEMENTS	MIN. 28 DAY STRENGTH MPa (psi)	EXPOSURE CLASSIFICATION
Foundations and Footings	25 (3600)	-
Walls	30 (4350)	F2
Columns	30 (4350)	F2
Arch. concrete (see Arch.)		
Exterior	30 (4350)	F2
Interior	30 (4350)	-
Slabs on Grade		
Exterior	32 (4650)	C2
Interior	32 (4650)	-
Topping Concrete	32 (4650)	-

d) Select maximum aggregate size as required to accommodate rebar congestion and allow for proper finishing (for example at topping slabs). Include maximum aggregate size in mix design submittal.
e) Supplementary cementitious materials (SCM), where noted, is the mass of SCM as a percentage of the total mass of cementitious materials. All SCM shall comply with CSA A3001.
f) Where masonry grout strength is determined by cylinder tests, cylinder strength must meet or exceed 70% of the strength listed.
g) Submit mix designs for each concrete mixture to the Consultant and testing agency for review and approval a minimum of 14 days prior to concrete placement. Identify elements for which each mix design is intended.

3. Contractor is solely responsible for design of concrete formwork, shoring, and bracing. All formwork shall conform to CSA S269.3.

4. Install expansion and/or construction sequence joints in concrete structures greater than 45m (150 ft) in length. Details and locations shall be discussed with and approved by the Consultant in writing prior to construction.

5. See Architectural drawings for slab elevations, slab edge locations, drainage, slopes, and locations of reglets, reveals, and chamfers. Unless noted otherwise, bevel exposed corners of slabs, beams, slab bands, columns, and walls 20mm x 20mm (3/4" x 3/4").

6. Coordinate with Work of other Sections in forming and placing openings, keyways, slots, reglets, recesses, waterstops, bolts, anchors, and other inserts.

7. Blockouts, nailers, conduits, ducts, pipes, sleeves, and other openings are subject to approval by the Consultant.

a) Openings and conduits are not permitted in shear wall zones or within 1000mm (39") of wall ends, wall intersections, and columns.
b) Where permitted, space openings two diameters apart, but not less than 150mm (6").
c) Single openings larger than 300mm (12") or a group of openings occupying together more than 300mm x 300mm (1.0 square foot) in any one square meter (10 square feet) are not permitted without approval of the Consultant.

8. Carry out all hot and cold weather concrete Work in accordance with CSA A23.1.

a) When temperature is expected to fall between 3°C and -10°C within 3 days of pouring concrete, the Contractor shall carry out one or more of the following procedures:
1) Heat mix water or aggregate to maintain a minimum concrete temperature of 10°C.
2) Heat the formwork or soil surface. Do not cast concrete against any surface with a temperature less than 3°C. Calcium chloride or other de-icing salts are not permitted.
3) Cover concrete with insulation blankets for the first 36 hours after concrete placement. Do not cast concrete when temperature is expected to fall below -10°C within 36 hours after placement.
4) Provide a heated enclosure to maintain the temperature of all concrete surfaces above 10°C for a minimum of 36 hours after placement.
5) Provide alternate mix designs for cold weather.
b) When the temperature is expected to rise above 25°C the Contractor shall:
1) Cool concrete to maintain a maximum temperature of 30°C.
2) Prevent concrete from drying.

9. Perform concrete material tests per "Field Review and Testing" section of these General Notes.

10. Take measures to minimize shrinkage cracking, including covering and dampening concrete during the curing stage.

11. Take all precautions to ensure exposed concrete achieves finish desired by the Architect, including proper forming, mix design, site care, and adequate vibration. Protect against damage during stripping and entire construction period.

12. Do not strip forms for structural elements until concrete strength has reached 50% of the design compressive strength for columns and walls, 70% of the design compressive strength for slabs and beams, and 75% of the design compressive strength for slabs and beams in parking structures. Strength of concrete shall be determined from field-cured cylinders. All shoring and reshoring must be approved by Contractor's shoring engineer.

13. Repair and patch defective areas when approved by Consultant and Architect. Remove and replace concrete that cannot be repaired and patched to Consultant's and Architect's approval.

14. Unless otherwise noted, provide 3.2mm (1/8") wide x T/4 deep contraction joints in two directions in slabs on grade. Center joints on column lines, and space at maximum 4500mm (15 feet) o.c. (T = slab thickness).

CONCRETE REINFORCEMENT

1. Perform all Work in accordance with CSA A23.1, the RSIC Manual of Standard Practice, and Specification Section 03 20 00.

2. Deliver, store, and handle steel reinforcement, welded wire fabric, and accessories to prevent bending and damage.

3. Reinforcing shall be new billet steel conforming to the following standards:

a) 10M and larger — CSA G30.18, Grade 400
b) Weldable reinforcement — CSA G30.18, Grade 400W (welding to CSA W186)
c) Welded wire mesh (plain) — ASTM A185
ASTM A775

4. Provide weldable reinforcement in concrete shear walls and frame members with force modification factors Rd greater than 2.0 (see "General" section of these General Notes).

5. Weldable reinforcement (including deformed anchor bars) must be clearly identified on each piece.

6. Provide the following fillet weld sizes for welding of deformed bar anchors to embed plates:
a) 10M (3/8")Ø 6mm (1/4")
b) 15M (5/8")Ø 10mm (3/8")
c) 20M (3/4")Ø 12mm (1/2")

7. Test stud rail assemblies per the "Field Review and Testing" section of these General Notes.

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9. Provide minimum reinforcement as follows, unless noted otherwise:

a) Wall reinforcement:
150mm (6") wall - 10M @ 300 (12") VERT., 10M @ 300 (12") HOR., CENTERED
200mm (8") wall - 15M @ 450 (18") VERT., 15M @ 450 (18") HOR., CENTERED
250mm (10") wall - 10M @ 400 (16") VERT., EACH FACE STAGGERED
10M @ 400 (16") HORIZ., EACH FACE STAGGERED
300mm (12") wall - 10M @ 300 (12") VERT., EACH FACE STAGGERED
10M @ 300 (12") HORIZ., EACH FACE STAGGERED
2-15M verts full height at ends of all walls unless noted otherwise

b) Slab reinforcing (or temperature reinforcing):

100mm (4")	10M @ 500 (20") EACH WAY
125mm (5")	10M @ 400 (16") EACH WAY
150mm (6")	10M @ 300 (12") EACH WAY
175mm (7")	15M @ 500 (20") EACH WAY
190mm to 215mm (7 1/2" to 8 1/2")	15M @ 450 (18") EACH WAY
225mm to 250mm (9" to 10")	15M @ 400 (16") EACH WAY
275mm to 300mm (11" to 12")	15M @ 350 (14") EACH WAY
Concrete topping (ie: over steel deck)	152x152 MW 9.1x MW 9.1 welded wire mesh

c) Column integrity reinforcing at suspended slabs:
2-20M bottom extra each way, extend minimum 740mm past face of column. See typical detail.
d) Unless noted otherwise, openings in walls and slabs shall have 2-15M extra each side extending 600mm (2'-0") past corners, plus 2-15M x 1200mm (4'-0") diagonal each corner.
e) Footing reinforcement:
2-15M continuous plus hooked dowels of same size and spacing as wall vertical reinforcing.
Other locations not identified above: 15M @ 400 (16")

10. Provide concrete protection for reinforcement as follows, unless noted otherwise:

a) All surfaces placed in contact with ground
b) Formed surfaces exposed to ground or weather
c) Walls
d) Column ties - interior
e) Column ties - exterior
f) Slabs
g) Slab bands and Beams
h) Parking slab - top
- bottom
i) Slab on grade (from top of slab)
j) Other, unless otherwise noted

11. Clear distance between bars, except for columns, shall not be less than 1.4 times the nominal diameter of the bar, or 30mm (1 1/4"), or 1.4 times the maximum size of the coarse aggregate. Bars placed in two or more layers shall have a minimum clear distance between the layers of not less than 30mm (1 1/4") and shall be placed directly above and below each other.

12. Clear distance between bars in columns shall not be less than 1.5 times the nominal diameter of the bars, or 38mm (1 1/2"), or 1.5 times the maximum size of the coarse aggregate.

13. Accurately place all reinforcement. Chair and tie reinforcement to prevent displacement and to maintain specified cover. Do not tack weld crossing reinforcing bars. Install column reinforcement accurately with templates. Protect chairs against rusting where required for appearance.

14. Provide CSA standard hooked dowels from bottom of footings to match and lap with verticals. Install masonry dowels accurately to align with center of walls. Do not wet dowel reinforcement unless approved by the Consultant.

15. Do not field bend reinforcement except where indicated or authorized by the Consultant. When field bending is authorized, bend without heat. Replace bars which develop cracks or splits.

16. Provide continuous bars, properly lapped at splices. Bend and lap horizontal reinforcement at all corners and intersections. Lap splices not shown on the Drawings are not permitted unless approved in writing by the Consultant.

17. Unless noted otherwise, lap lengths, including dowels, for 400 MPa (58 ksi) reinforcement shall be as follows:

10M - 400mm (16")
15M - 600mm (24")
20M - 750mm (30")
25M - 1170mm (46")
30M - 1400mm (55")

18. Placing and reinforcement shall be reviewed by the Consultant or the Consultant's agent prior to any concrete being placed. See "Field Review and Testing" section of these General Notes.

19. Reinforcing not indicated on the structural Drawings needed for support of mechanical or electrical items (e.g. radiant piping, conduit, etc.) is the responsibility of the Contractor. Assume a minimum of 10M bars spaced at 350mm (14") in one direction for areas without structural top reinforcing.

STRUCTURAL STEEL FRAMING

1. Perform all Work in accordance with CSA S16 and Specification Section 05 12 00.

2. Submit shop drawings showing fabrication and erection of all structural steel components to the Consultant for review prior to fabrication. Show all connections and details, material specifications, and finishes; include an erection layout for all members. Do not proceed with fabrication until shop drawings have been approved by the Consultant.

3. Fabricate structural steel members to CISC Code of Standard Practice, CSA W47.1, and CSA W59. All fabrication and welding exposed to view shall be appearance quality to the Architect's satisfaction.

4. All steel fabricators and erectors must have full approval of the Canadian Welding Bureau under CSA W47.1. Weld to CSA W59 using welders qualified in accordance with CSA W47.1.

5. Protect steel members from corrosion, deformation, and other damage during storage and handling.

6. Provide steel conforming to the following standards, unless noted otherwise:

a) Rolled shapes (W-sections) CSA G40.20/G40.21 Grade 350W
b) Rolled shapes (other) CSA G40.20/G40.21 Grade 300W
c) HSS GSA G40.20/G40.21 Grade 350W, Class C
d) Plates and flat bars CSA G40.20/G40.21 Grade 300W
e) Pipe ASTM A53, Grade B
f) Bolts ASTM F3125 Grade A325
g) Anchor Bolts ASTM F1554, Grade 36
h) Deformed bar anchors CSA G30.18, Grade 400W
i) Shear Stud Connectors ASTM A108, Grades 1015 through 1020, headed-stud type
j) Stainless steel Type 304

7. Welding of reinforcement to embedded plates is permitted only with weldable deformed bar anchors. Headed stud anchors on embed plates shall also be fillet welded; fusion machine welds are not permitted. See the "Concrete Reinforcement" section of these General Notes for fillet weld sizes.

8. Provide one coat of shop primer to steel surfaces except the following, or unless noted otherwise:
a) Surfaces embedded in concrete or mortar
b) Surfaces to be field welded
c) Surfaces of high-strength bolted, slip-critical connections
d) Surfaces to receive sprayed fire-resistive materials (applied fireproofing)
e) Galvanized surfaces

9. Hot dip galvanize all steel Work permanently exposed to the weather, including fasteners, unless noted otherwise. Hot dip galvanize all steel connectors and fasteners for wood members exposed to view in the completed structure, where exposure to rain during or after construction may cause rusting or staining of the wood. Galvanizing shall conform to ASTM A123 and A153.

10. Repair galvanized areas that are field welded or otherwise damaged during construction to comply with ASTM A780.

11. Control heat and pace of weld when welding may significantly warp the member or when welding steel adjacent to other materials (wood, concrete, etc.) to prevent cracking, spalling, or burning of adjacent material.

12. Grout fill all voids on underside of all base plates and bearing plates in contact with concrete or masonry. Provide non-shrink grout with a plastic consistency, capable of developing minimum compressive strength of 17 MPa (2500 psi) in 48 hours and 48 MPa (7000 psi) in 28 days. Follow manufacturer's instructions for mixing and placement.

13. See "Field Review and Testing" section of these General Notes for required reviews by Consultant and independent testing agency.

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16. See architectural Drawings for miscellaneous steel components. Any steel components not shown on the structural Drawings are considered to be secondary components (See "Secondary Components and Their Attachments" section of these General Notes). Assume 6mm (1/4") thickness unless noted otherwise.

15. If a structural steel member size specified on the structural Drawings is not available, the Contractor shall immediately notify the Consultant and allow for the next available size up. Contractor is responsible for the cost of any member upsizing due to availability of sizes or grades specified.

POST-INSTALLED ANCHORS

1. Except where indicated on the Drawings, use the following post-installed anchor types:

a) Anchorage to Concrete:
1) Adhesive Anchors:
(a) Hilti HIT-RE 500 V3 safeset epoxy adhesive anchoring system for slow cure applications.
(b) Hilti HIT-HY 200 safeset adhesive anchoring system for fast cure applications.
(c) Steel anchor element shall be Hilti HIS-N internally threaded inserts (used with RE-500), Hilti HIT-Z rod, Hilti HAS-E continuously threaded rod, or continuously deformed steel rebar.
2) Medium Duty Mechanical Anchors: Hilti Kwik HUS EZ and Kwik HUS EZ-I screw anchors or Hilti Kwik Bolt TZ expansion anchors.
3) Heavy Duty Mechanical Anchors: Hilti HDA undercut anchors or Hilti HSL-3 expansion anchors.
b) Anchorage to Solid Grouted Masonry:
1) Adhesive Anchors: Hilti HIT-HY 70 masonry adhesive anchoring system. Steel anchor element shall be Hilti HAS-E continuously threaded rod or continuously deformed steel rebar.
2) Mechanical Anchors: Hilti Kwik Bolt 3 expansion anchors.
c) Anchorage to Hollow or Multi-Wythe Masonry: Hilti HIT-HY 70 masonry adhesive anchoring system. Steel anchor element shall be Hilti HAS-E continuously threaded rod or continuously deformed steel rebar. Use the appropriate size screen tube per adhesive manufacturer's recommendations.

2. Anchor capacity used in design shall be based on the technical data published by Hilti or such other method as approved by the Consultant. Substitution requests for alternate products must be approved in writing by the Consultant prior to use. Contractor shall provide calculations demonstrating that the substituted product is capable of achieving the performance values of the specified product.

3. Install anchors per manufacturer's written instructions. Provide embedment, spacing, and edge distances indicated on the Drawings.

4. Overhead adhesive anchors must be installed using the Hilti Profi system.

5. Contractor shall arrange an anchor manufacturer's representative to provide onsite installation training for all of their anchoring products specified. All of Contractor's personnel who install anchors must be trained prior to the commencement of installing anchors.

6. The Contractor shall review the existing structural drawings and shall locate the position of reinforcing bars at the locations of the concrete anchors by Hilti Ferroscan, Hilti PS 1000, GPR, X-ray, chipping, or other means prior to drilling for post installed anchor placement. If reinforcing bars conflict with specific anchor locations, the Engineer shall be notified through a Request for Information. No existing bars shall be cut to install post-installed anchors without written consent from the Engineer.

ROUGH CARPENTRY AND SHEATHING

1. Perform all Work in accordance with CSA O86, Part 9 of the British Columbia Building Code, and Specification Sections 06 10 00 and 06 16 00.

2. Contractor is responsible for holding a start-up meeting with Fast + Epp prior to starting wood framing.

3. Provide the following material grades, unless noted otherwise on the Drawings. All softwood lumber shall conform to CSA O141 and have a maximum moisture content of 19% unless noted otherwise. All Douglas Fir plywood shall conform to CSA O121. All oriented strand board (OSB) shall conform to CSA O325.

a) Studs, joists, built-up posts and beams, and blocking:	SPF #2 or better, UNO
b) Top plates, bottom plates, and nailers:	D.Fir-L #2 or better
c) Strapping and nailing strips:	Hem-Fir, construction grade
d) Solid wood posts and beams:	D.Fir-L #1 or better
e) Floor, roof, and wall sheathing:	Douglas Fir plywood (DFP), exterior grade

4. Provide minimum 38x235 @ 400mm (2x10 @ 16") joists unless noted otherwise. Install double joists under parallel non-load bearing partitions above.

5. Provide minimum 38x38 (2x2) bridging or solid blocking between joists at 1800mm (6'-0) o.c. for all spans greater than 3000mm (10'-0), with 13mm (1/2") gap between bridging. Fully block all joist spaces below point loads.

6. Provide minimum two members for built-up beams and posts.

7. Provide minimum lintel of 2-38x235 (2-2x10) or 89x241 (3-1/2" x 9-1/2") LSL unless noted otherwise. Install double cripples under lintels.

8. Provide minimum wall studs as follows, unless noted otherwise:

Structural Walls
a) 1st floor — 38x89 @300mm (2x4 @12") o.c. or 38x140 @400mm (2x6 @16") o.c.
b) 2nd floor — 38x89 @400mm (2x4 @16") o.c. or 38x140 @400mm (2x6 @16") o.c.

Non-Structural Walls
38x89 @400mm (2x4 @16") o.c. for walls up to 3.6m (12'-0"),
38x140 @400mm (2x6 @16") o.c. for other walls

9. Laminate studs solid beneath all beam ends and carry through to concrete foundation below. Provide built-up studs to match number of laminations in built-up member being supported. Take care to ensure beams bear fully on supporting members. See typical details for additional notes and requirements.

10. Provide minimum sheathing as follows. Place sheets with face grain running perpendicular to supporting members in a staggered joint pattern unless noted otherwise.

a) Wall sheathing: 13mm (1/2") plywood fastened with 3.33mmØ x 64mm (0.131"Ø x 2 1/2") long nails @100mm (4") o.c. at sheet edges and @300mm (12") o.c. at intermediate studs. Block all unsupported edges with 50mm (2") nominal blocking and nailed as above. Drill adequate holes in exterior walls for ventilation. See typical details for additional notes and requirements.
b) Floor sheathing: 12mm (1/2") T&G plywood, glued and fastened with 3.33mmØ x 64mm (0.131"Ø x 2 1/2") long nails @100mm (4") o.c. at sheet edges and @250mm (10") o.c. at intermediate supports.
c) Roof sheathing: 13mm (1/2") plywood fastened with 3.33mmØ x 64mm (0.131"Ø x 2 1/2") long nails @100mm (4") o.c. at sheet edges and @250mm (10") o.c. at intermediate supports. Provide H-clips between each panel.

11. Provide minimum wall anchorage as follows, unless noted otherwise:
a) Non-Structural Walls:
Fasten bottom wall plate to concrete with 16mmØ x 250mm long (5/8"Ø x 10" long) anchor bolts @1200mm (4'-0) o.c. maximum. Provide bolts with standard nut and washer at top, and double nuts and standard washer at bottom. Provide bolts maximum 200mm (8") from ends and corners of walls and edges of window and door openings. Where hold down is indicated on the Drawings, increase edge distance to 300mm (12").
b) Structural Walls:
Fasten bottom wall plate to concrete with 16mmØ x 250mm long (5/8"Ø x 10" long) anchor bolts @900mm (3'-0") maximum. Provide bolts with 65mm diameter x 6mm thick (2-1/2" Ø x 1/4" thick) plate washers at top of bolts, and double nuts and standard washer at bottom. Provide bolts maximum 200mm (8") from ends and corners of walls and edges of window and door openings. Add hold down anchors where noted on plan; for walls above the foundation level, hold downs noted at the base of the wall are also required at the top of the wall below. See typical details for additional notes and requirements.
c) Lap top wall plates 1200mm (4'-0) and connect with 12-75mm (3") long nails minimum unless noted otherwise.

12. Provide sill gasket under all wood sill plates in contact with concrete. Provide moisture barrier at all other wood surfaces in contact with concrete or masonry. Do not use pressure-treated lumber unless noted on plan.

13. All wood framing and sheathing shall be reviewed by the Consultant or the Consultant's agent prior to concealment. See "Field Review and Testing" section of these General Notes.

14. The "Timber Fasteners and Connectors" section of these General Notes also applies to this Work.

GLUE-LAMINATED TIMBER FRAMING

1. Perform all Work in accordance with CSA O86, CSA O122, and Specification Section 06 18 19. If European glulam is used, members shall comply with EN 14080.

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3. Provide 610mm (24") long samples of each Quality appearance grade member with shop-applied sealer for review and approval by Architect and Consultant.

4. Submit shop drawings showing fabrication and erection of all glulam components to the Consultant for review prior to fabrication. Show all connections and details, material specifications, and finishes; include an erection layout for all members. Do not proceed with fabrication until shop drawings have been approved by the Consultant.

5. Glulam manufacturer shall be certified in accordance with CSA O177 or EN 14080.

6. Individually wrap members using plastic-coated paper covering with water-resistant seams. Slit underside to prevent accumulation of moisture inside the wrapping. Store members off the ground with spacer blocks so air may circulate around all faces of members. Take all necessary precautions to keep framing dry and protected from UV light during and after installation. Contractor shall provide a moisture mitigation plan that outlines steps taken during construction that ensures weather protection of timber structures. See specifications for more information.

7. All glulam members shall meet the following specifications. Any substitution must have the written approval of the Architect and the Consultant.

a) Species:	Douglas Fir to CSA O122
b) Stress Grade:	Beams: 24f-E (24f-EX for cantilever or continuous beams) Columns: 16c-E
c) Adhesive:	CSA O112, to grade of service required in accordance with CSA O122, clear or white
d) Appearance Grade:	Commercial where the member is concealed, Quality elsewhere
e) Sealer:	Manufacturer's standard, transparent, compatible with finish

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9. Where the Drawings indicate that glued-laminated beams require a fire rating of 1 hour or greater, the lamination layup shall be modified as specified in CSA O86, Annex B, Clause B.2.2.

10. After end cutting each member to final length, apply a double coat of end sealer to ends and other cross-cut surfaces.

11. For all members on the exterior of the building, provide a shop-applied 13mm (1/2") thick end cap of matching wood material glued to the end face. Shop apply three coats of sealant to all sides and end caps of members when exposed to rain or moisture.

12. Fabricate horizontal members with circular or parabolic camber equal to 1/500 of span.

13. Mark members for identification during erection. Ensure that marks will be concealed from view in final assembly. Clearly mark top surface.

14. Make adequate provision for possible erection stresses. Set members level to correct positions. Securely brace members and anchor in place until permanently secured by finished structure.

15. Fit members closely and accurately without trimming, cutting, or other modifications, unless approved in writing by the Consultant. Site cutting or boring of members, other than shown on shop drawings, is not permitted without consent of Consultant. Coat all field-cut openings with minimum two coats of clear sealer.

16. Provide moisture barrier at all locations where members abut concrete or masonry construction.

17. See architectural Drawings for finish requirements.

18. Provide gradual heating of enclosed building to minimize cupping and checking.

19. The "Timber Fasteners and Connectors" section of these General Notes also applies to this Work.

TIMBER FASTENERS AND CONNECTORS

1. General: Where shop drawings submittals are required, clearly identify all fasteners and connection systems on shop drawings.

2. Light Frame Connectors: Provide galvanized Simpson Strong-Tie connectors or approved alternate where required, unless noted otherwise. Use joist hangers with minimum 4.5 kN (1000 lb) capacity for all flush framing. Fully nailed pressure blocks are permitted only with Consultant's written approval.

3. Nails: Diameter and length as shown on the Drawings, galvanized unless noted otherwise. Substitution of common nails with power-driven nails (P-nails) of the same length and diameter and full round heads is acceptable. Substitution of power-driven nails of smaller diameter is permitted only with Consultant's written approval. Set nail gun pressure so that nail heads do not crush plywood surface; nail head penetration shall not exceed 2mm (1/16").

4. Screws:

a) Screws are called up on the drawings as follows: PSC 10 x 300

Screw type (see below); Screw diameter, mm (thread); Screw length, mm

b) The following partially threaded screws with countersunk heads (PSC) are acceptable, unless noted otherwise on the Drawings:

Manufacturer	Fastener Type
HECO	TOPIX Countersunk Partially Threaded
RothoBlaas	HBS (wood to wood applications only)
SFS Intec	WFC
	WFR
SWG	ASSY 3.0 Eco
SPAX	MULTI Head Partially Threaded
Schmid	RAPID 2000, RAPID Komprex

c) The following partially threaded screws with hex heads (PSH) are acceptable, unless noted otherwise on the Drawings:

Manufacturer	Fastener Type
SFS Intec	WFD
SWG	ASSY 3.0 Kombi
Schmid	RAPID Dual

d) The following partially threaded screws with washer heads (PSW) are acceptable, unless noted otherwise on the Drawings:

Manufacturer	Fastener Type
HECO	TOPIX Washer Head Partially Threaded
RothoBlaas	TBS
SWG	ASSY 3.0 SK, ASSY F.W.H.
SPAX	Washer Head Partially Threaded
Schmid	RAPID Komprex, RAPID SuperSenkFix

e) The following fully threaded screws with countersunk heads (FSC) are acceptable, unless noted otherwise on the Drawings:

Manufacturer	Fastener Type
HECO	TOPIX
RothoBlaas	VGS
SFS Intec	WR
SWG	ASSY VG CSK (countersunk head)
SPAX	MULTI Head Fully Threaded
Schmid	RAPID FullThread

f) The following fully threaded screws with cylindrical heads (FSZ) are acceptable, unless noted otherwise on the Drawings:

Manufacturer	Fastener Type
RothoBlaas	VGZ
SWG	ASSY VG CYL
SPAX	Cylindrical Head Fully Threaded
Schmid	RAPID FullThread

g) Traditional lag screws, Simpson SDS/SDW screws, GRK screws, and other specialty screws are acceptable only where specifically indicated on the Drawings. Lag screws must be machine threaded, not cast threaded, with holes pre-drilled in accordance with CSA O86.

h) Where screws are used in combination with architecturally exposed steel plates, where a flush head is required, or where screws are not perpendicular to steel plate, use screws with countersunk heads unless noted otherwise. Countersink holes in steel to receive tapered screw heads.

i) Where screws are used in combination with steel plates not exposed to view, use screws with a hex head unless noted otherwise. Provide hole shape per manufacturer's recommendations for each screw type.

j) Predrilled holes: Provide holes in steel with diameter not more than 1mm greater than diameter of screw. Where pre-drilling of wood is recommended by the supplier, provide hole diameter strictly per manufacturer's recommendations.

k) Contractor to submit one sample of each different type of steel plate assembly, including screws, to Consultant for approval prior to mass fabrication.

l) See manufacturer's specifications for all installation details unless noted otherwise. Use low rpm/high torque drills with torque clutch. The use of impact drills is prohibited. For connections using carbon steel screws in combination with steel plates, use the following torque settings:

Screw Diameter (mm)	Torque (N-m)
8	18
10	26
12	70

Submit results of torque drill calibration tests prior to commencing Work.

5. Tight-Fit Pins and Tight-Fit Bolts:

a) For architecturally exposed applications, provide Type 304 stainless steel. For hidden applications, provide ASTM A307.
b) Provide holes in timber of the same diameter as pin/bolt. Provide holes in steel with diameter not more than 1.2mm greater than diameter of pin/bolt. Hole pattern shall be square and aligned.
c) Use plywood template when installing pins/bolts to avoid splintering of wood opposite driving direction.
d) Contractor to submit sample to Consultant for approval prior to mass fabrication.

6. Through-Bolts:

a) Provide ASTM A307 unless noted otherwise.
b) Provide holes in timber not more than 2mm greater than diameter of bolt.
c) Threaded rods may be used in lieu of bolts, provided the rod is threaded at the ends only.

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9. Custom Steel Brackets: Provide steel plates conforming to CSA G40.20/G40.21 Grade 300W or better. See "Structural Steel Framing" section of these General Notes for galvanization requirements.

10. Pressure-Treated Wood: All fasteners in contact with pressure-treated wood are to be hot dip galvanized to ASTM A153.

11. Specialty Products: All other fastening and connection systems, including but not limited to Simpson, Pitzl, Knapp, Sherpa, and HBV systems, are specified on the Drawings.

12. Substitutions: Alternative systems may be acceptable if they provide equal performance to the systems shown on the Drawings. Refer to "General" section of these General Notes for alternative proposals. If accepted, the design of alternative systems becomes the responsibility of the Contractor's engineer and will require letters of assurance.

13. Fasteners Used for Erection Purposes: Additional fasteners required for erection purposes are the responsibility of the Contractor and are to be included in the bid. Clearly identify all such fasteners on the shop drawings.

WOOD I-JOISTS

1. Perform all Work in accordance with CSA O86 and Specification Section 06 17 33.

2. Wood I- joists shall be designed by a Professional Engineer, retained by the timber fabricator and experienced in the design of this Work.

a) Design for loads shown on the structural Drawings.

b) Limit joist deflections under live load to span/360. At roof joists over areas which do not have suspended ceilings, limit joist deflection under live load to span/240.

c) Provide a minimum floor performance score of 45 according to Weyerhaeuser's iLevel® Trus Joist® TJ-Pro™ Ratings, or equivalent alternative rating system.

d) Space members not to exceed 400mm (16").

e) Drawings and calculations shall be signed and sealed by the Professional Engineer.

f) The Professional Engineer sealing the fabricator's shop drawings is also responsible for all field review of his or her Work. The Engineer shall provide signed and sealed letters of assurance (Schedules S-B and S-C) to the Consultant confirming the Work has been completed in accordance with the final reviewed shop drawings and all structural requirements.

3. Submit shop drawings showing fabrication and erection of all joists to the Consultant for review prior to fabrication. Show all connections and details, design loads, and material specifications; include an erection layout for all joists. Do not proceed with fabrication until shop drawings have been approved by the Consultant.

4. Store, handle, and erect joists in accordance with manufacturer's written instructions.

5. Manufacture joists with solid plywood or OSB webs and structural wood chords. Joist manufacturer shall be under the supervision of an approved third-party inspection agency.

6. Manufacturer is responsible for the design and supply of all bridging, blocking, accessories, and metal connection hardware required for the stability of the joist assembly.

7. Coordinate bridging locations with all other architectural and mechanical requirements.

8. Stamp each joist indicating nominal joist depth, joist class, span ratings, manufacturer's name, plant number, third-party certification, and code evaluation agencies.

9. Make adequate provision for possible erection stresses. Set joists level to correct positions. Securely brace joists and anchor in place until permanently secured by finished structure.

10. Follow manufacturer's guidelines for web openings. Do not drill or cut chords.

11. The "Timber Fasteners and Connectors" section of these General Notes also applies to this Work.

SECONDARY COMPONENTS AND THEIR ATTACHMENTS

1. Refer to all Contract Documents for secondary components. Secondary components are elements that are structurally significant for the functions they serve but do not contribute to the overall strength or stability of the primary structural system. Examples include, but are not limited to, the following:

a) Site work elements exterior to the base building such as landscaping components, retaining walls, lamp standards, bollards, fences, pools, signs, and civil work.
b) Architectural components such as guard and hand rails, flag posts, canopies, ceilings, etc.
c) Cladding, window mullions, glazing, and store fronts.
d) Architectural cladding and attachments, including precast concrete, stone, and brick veneer.
e) Skylights and glass canopies.
f) Glass block and attachments.
g) Interior and exterior light gauge steel stud walls.
h) Raised floor systems.
i) Elevators, hoist beams, and rail support members.
j) Window washing equipment, including attachments.
k) Fall restraint anchors, including any additional required framing not shown on plans.
l) Attachments and bracing for mechanical and electrical components.
m) Library stacks.
n) Roofing material.
o) Parking slab membrane.

2. Design and detailing of the above items and their attachments are not the responsibility of the Consultant. They shall be designed by specialty Professional Engineers, retained by the Contractor and experienced in the design of this Work.
a) Design secondary components in accordance with Part 4 of the British Columbia Building Code and with the design criteria listed in the "General" section of these General Notes.
b) Drawings and calculations of components designed by the specialty Professional Engineer shall be signed and sealed by the Professional Engineer.
c) Submit sealed shop drawings of secondary or non-structural components which may affect the primary structural system to the Consultant for review. Shop drawings should clearly indicate the method and means of attachment and the magnitude of forces that the base structure must withstand. The Consultant's review shall be only for the components' effect on the primary structural system and may result in the need to modify the method of attachment.
d) The Professional Engineer sealing the Contractor's shop drawings is also responsible for all field review of his or her Work. The Engineer shall provide signed and sealed letters of assurance (Schedules S-B and S-C) to the Consultant confirming the Work has been completed in accordance with the final reviewed shop drawings and all structural requirements.

3. Protection of connections of dissimilar metals against galvanic corrosion is the responsibility of the specialty Professional Engineer.

4. Elevator requirements:

a) Refer to elevator shop drawings for shaft dimensions, pit depth, location of divider beams and rail support members, and rough opening sizes for doors. Contractor is responsible for confirming all dimensions prior to commencing Work.
b) Elevator manufacturer shall provide Consultant with all loads and deflection criteria necessary to size supporting structure, including rail supports, divider beams, hoist beams, pit slabs, and machine room slabs

5. Detail all secondary components for construction tolerances plus the following building movements and deflections:

a) Vertical movements:
1) Vertical deflections of beams, slabs, and decking: L/180 (25mm min.)
2) Differential deflections of beams and slabs at adjacent floors at building perimeter: L/240 (16mm min.)

b) Horizontal movements:
1) Storey drift due to wind: H/400
(Design components to withstand this movement without damage)
2) Storey drift due to earthquake: H/40
(Design components to withstand this movement without collapse)

ABBREVIATIONS

A.BOLTS	- ANCHOR BOLTS	LLH	- LONG LEG HORIZONTAL
ADDL	- ADDITIONAL	LLV	- LONG LEG VERTICAL
ALT	- ALTERNATE	L.L.	- LIVE LOAD
ARCH.	- ARCHITECT / ARCHICTECTURAL	LONGIT.	- LONGITUDINAL
B.L.L.	- BOTTOM LOWER LAYER	LSL	- LAMINATED STRAND LUMBER
B.U.L.	- BOTTOM UPPER LAYER	LVL	- LAMINATED VENEER LUMBER
BCE	- BOTTOM CHORD EXTENSION	L.V.	- LENGTH VARIES
BOT.	- BOTTOM	Mf	- FACTORED MOMENT
B/U	- BUILT UP	MAX.	- MAXIMUM
Cf	- FACTORED COMPRESSION FORCE	MECH.	- MECHANICAL
CANT.	- CANTILEVERED	MIN.	- MINIMUM
CG.	- CENTER OF GRAVITY	N.STUDS	- NELSON STUDS
CL	- CENTERLINE	NTS	- NOT TO SCALE
CLR.	- CLEAR / CLEARANCE	O.C.	- ON CENTER
COL.	- COLUMN	O.F.	- OUTSIDE FACE
CONC.	- CONCRETE	OPP.	- OPPOSITE
CONN.	- CONNECTION	P.C.	- PRECAST CONCRETE
CONT.	- CONTINUOUS	PL.	- PLATE
C'SINK	- COUNTERSINK	PLY.	- PLYWOOD
C.I.P.	- CAST IN PLACE	PSC	- PARTIALLY THREADED SCREWS WITH COUNTERSUNK HEADS
C/W	- COMPLETE WITH		
CJ	- CONTROL JOINT	PSH	- PARTIALLY THREADED SCREWS WITH HEX HEADS
CLT	- CROSS LAMINATED TIMBER		
D.L.	- DEAD LOAD	PSL	- PARALLEL STRAND LUMBER
DIAG.	- DIAGONAL	PSW	- THREADED SCREWS WITH WASHER HEADS
DP.	- DEEP		
DWG(S).	- DRAWING (S)	P/T	- POST-TENSION
EL	- ELEVATION	REINF.	- REINFORCEMENT
ELEC.	- ELECTRICAL	R/W	- REINFORCED WITH
E.F.	- EACH FACE	S.D.L.	- SUPERIMPOSED DEAD LOAD
E.S.	- EACH SIDE	S.O.G.	- SLAB ON GRADE
E.W.	- EACH WAY	S.S.	- STAINLESS STEEL
EXIST.	- EXISTING	STAG.	- STAGGERED
FDN	- FOUNDATION	STD.	- STANDARD
FSC	- FULLY THREADED SCREWS WITH COUNTERSINK HEADS	STIFF.	- STIFFENER
		STIRR.	- STIRRUP
FSZ	- FULLY THREADED SCREWS WITH CYLINDRICAL HEADS	Tf	- FACTORED TENSILE FORCE
		THK.	- THICK
FTG	- FOOTING	TJI	- TRUSS JOINT
GA.	- GAUGE	T.L.L.	- TOP LOWER LAYER
GALV	- GALVANIZED	TRANSV.	- TRANSVERSE
G/L	- GRID LINE	T.U.L.	- TOP UPPER LAYER
GL	- GLULAM	T & B	- TOP & BOTTOM
H1E	- HOOK ONE END	TYP.	- TYPICAL
H2E	- HOOK TWO ENDS	U.D.L.	- UNIFORMLY DISTRIBUTED LOAD
HD	- HOLD DOWN	U.N.O.	- UNLESS NOTED OTHERWISE
H.D.	- HOT DIPPED GALVANIZED	U/S	- UNDERSIDE
HDR	- HEADER	Vf	- FACTORED SHEAR FORCE
HORIZ	- HORIZONTAL	VERT.	- VERTICAL
I.F.	- INSIDE FACE	WD.	- WIDE
LG.	- LONG	WP.	- WORK POINT

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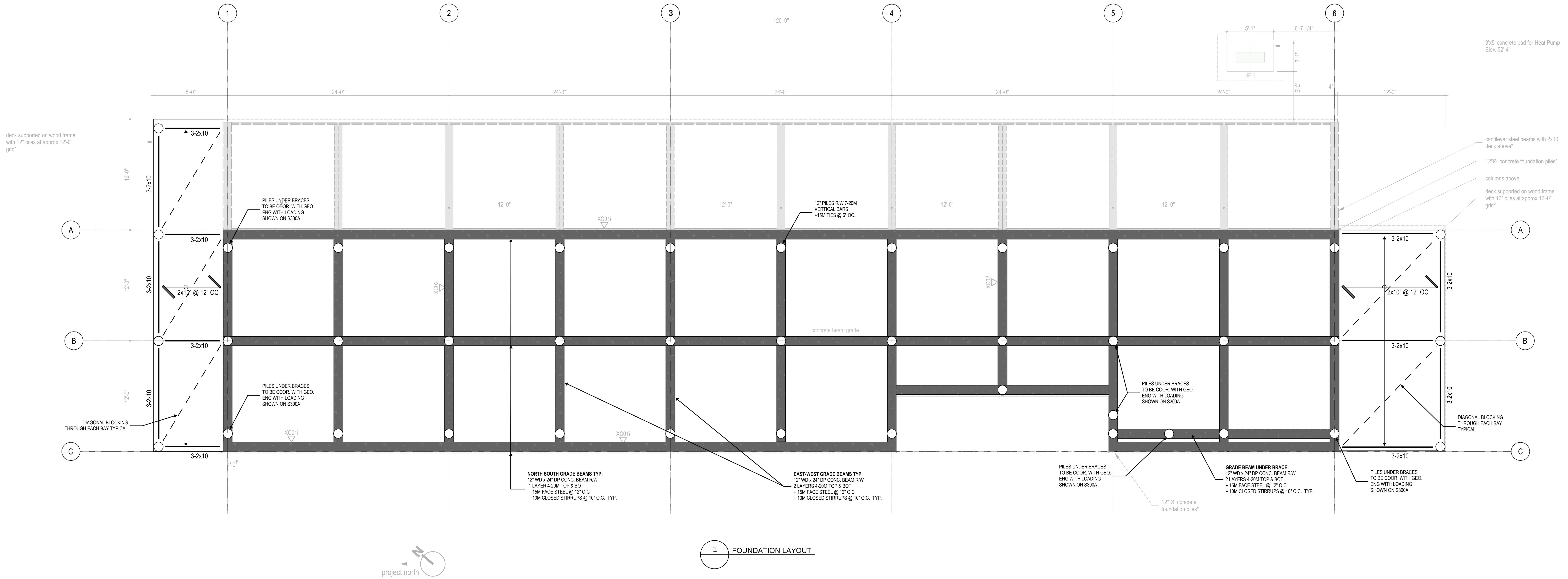
Arts and Heritage Hub

Artists' Studio Building

Client	Drawn By	Reviewed By	Sheet Number
Town of Ladysmith	NDR		S100

Project Number	Sheet Name		
2729	General Notes		

Scale	Date	Issue No.	Issued For	Revision
n/a	2023.02.28	71	BP AND TENDER SET	–



1 FOUNDATION LAYOUT

EGBC PTP#1000216

2023-03-31

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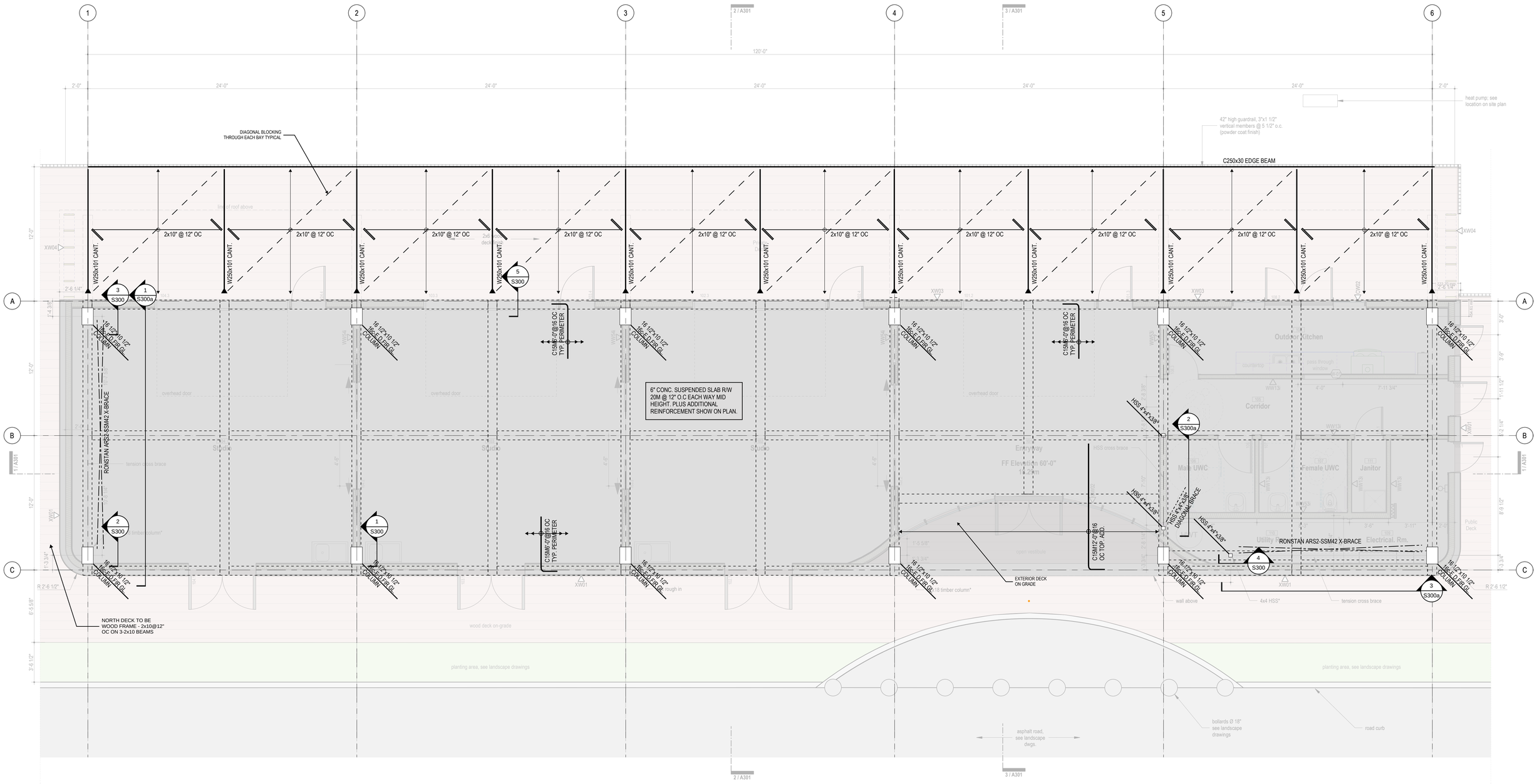
Client		Drawn By	Reviewed By	Sheet Number
Town of Ladysmith		NDR		S200
Project Number	Sheet Name			
2729	Foundation Design			
Scale	Date	Issue No.	Issued For	Revision
n/a	2023.02.28	71	BP AND TENDER SET	–



project north

EGBC LTP#1000216

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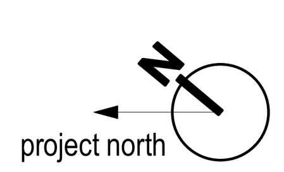
Artists' Studio Building

Client: Town of Ladysmith			Drawn By: NDR	Reviewed By:
Project Number: 2729	Sheet Name: Main Floor Framing			
Scale: n/a	Date: 2023.02.28	Issue No.: 73	Issued For: BP AND TENDER SET	

Sheet Number: S201

Revision: –



WOOD SHEAR WALL SCHEDULE								
MARK	SHEATHING	NAIL TYPE	NAIL SPACING @ PANEL EDGES[2]	MIN. RIMBOARD/ BLOCKING[3]	WALL BOTTOM PLATE TO RIMBOARD[4]	RIMBOARD TO WALL TOP PLATE[5]	MUDSILL TO CONCRETE[6]	HOLD DOWN BOTH ENDS
SW1	1/2" D. FIR PLYWOOD 2 SIDES[1]	2 1/2" LG x 0.131"Ø (3.33mmØ)	3" o/c	2x1 3/4" LSL	2 rows 3" LG x 0.131"Ø @ 4" o/c each rimboard	LTP4 CLIPS @ 10" o/c each side	3/4"Ø A.B. @ 16" o/c	HDU8

EGBC PTP#1000216
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2023-03-31

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Arts and Heritage Hub

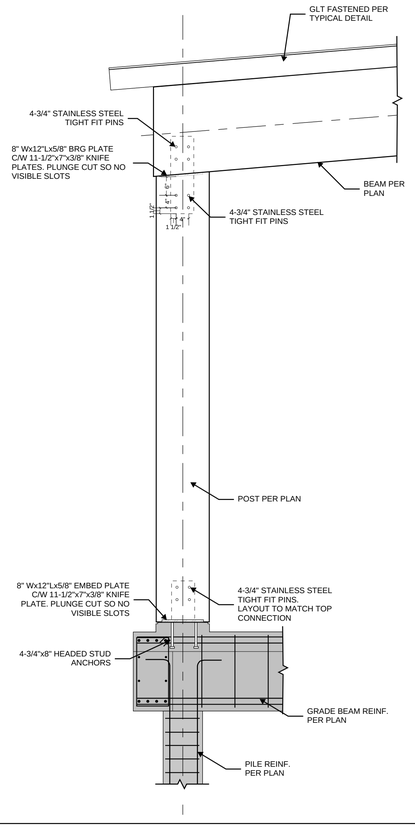
Artists' Studio Building

Client	Drawn By	Reviewed By	Sheet Number
Town of Ladysmith	NDR		S202

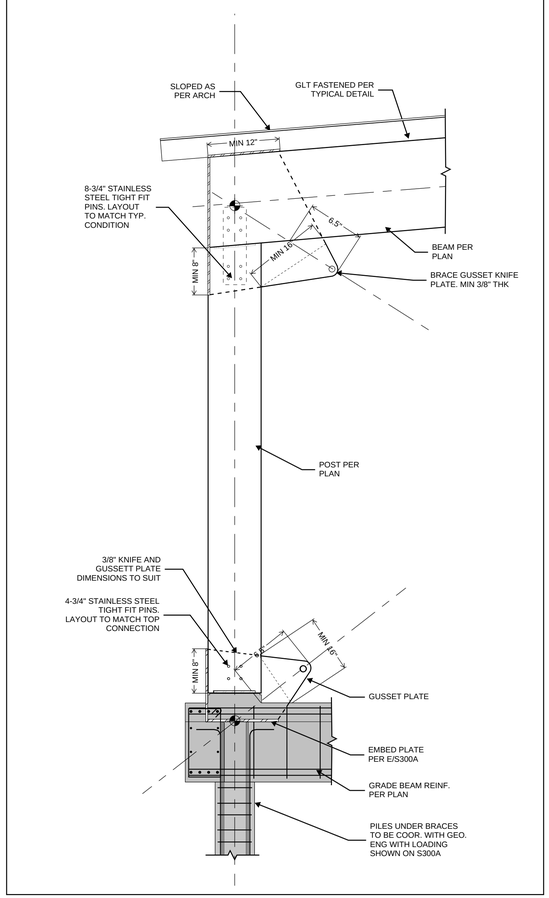
Project Number	Sheet Name		
2729	Roof Framing		

Scale	Date	Issue No.	Issued For	Revision
n/a	2023.02.28	73	BP AND TENDER SET	–

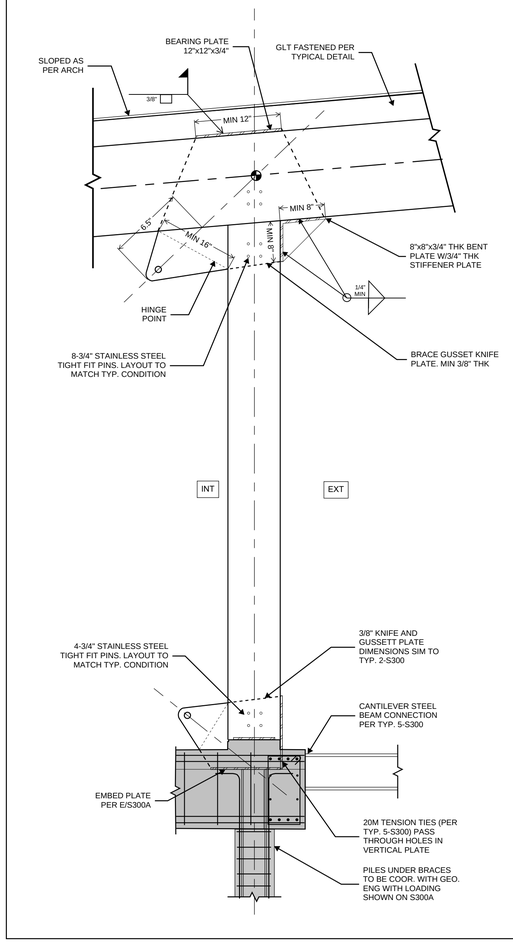
POST TO BEAM FOUNDATION TO POST — TYP. 1-S300



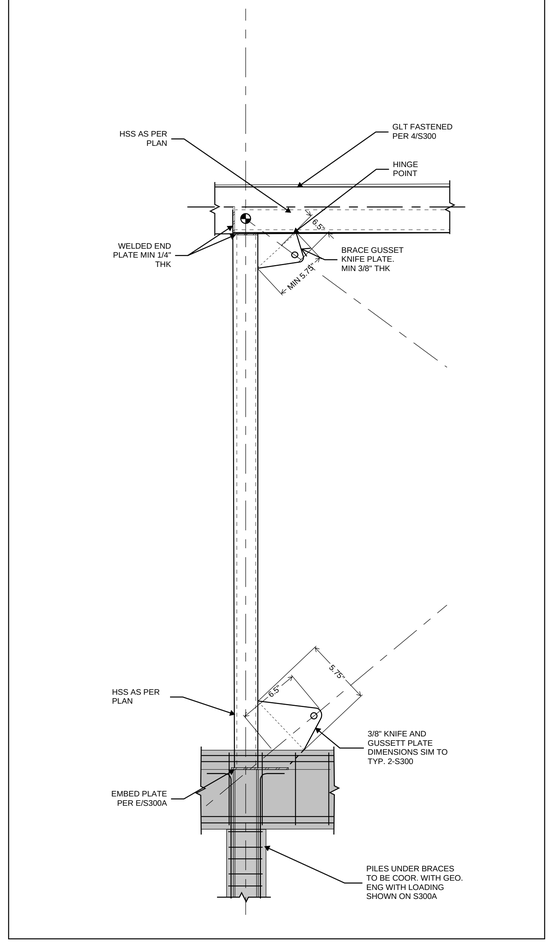
POST TO BEAM FOUNDATION TO POST AT BRACE — TYP. 2-S300



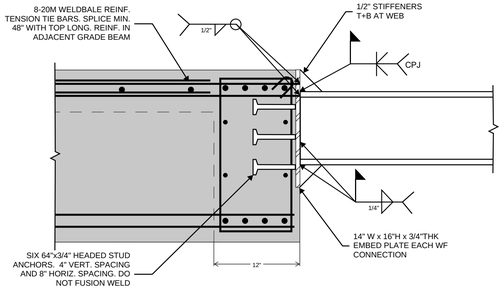
POST TO CANTILEVER, AT BRACE FOUNDATION TO PILE — TYP. 3-S300



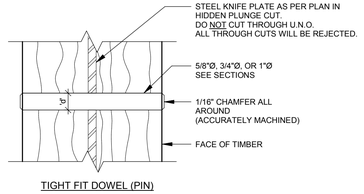
POST TO BEAM HSS, AT BRACE FOUNDATION TO PILE — TYP. 4-S300



CANTILEVER BEAM TO GRADE BEAM CONNECTION — TYP. 5-S300



TYPICAL TIGHT FIT DOWEL / BOLT & THROUGH BOLT DETAIL — TYP. 6-S300



TIGHT FIT DOWEL (PIN)

ECBC PP#1000216

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA N. DE RIDDER # 40995

2023-03-31

CHECKWITCH POIRON ARCHITECTS INC

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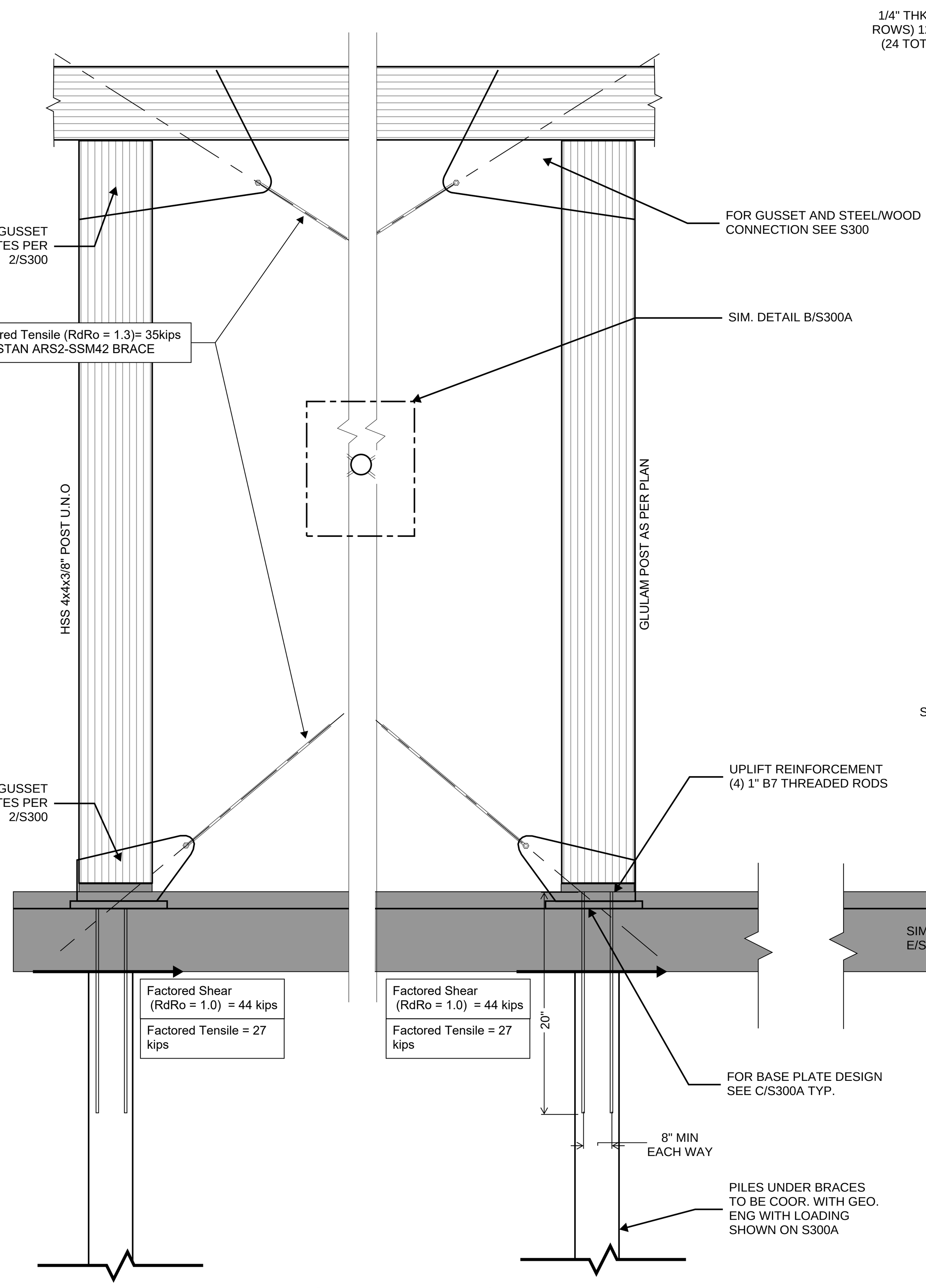
Project No.: 2729
Drawn by: bjB
Designed by: bjB

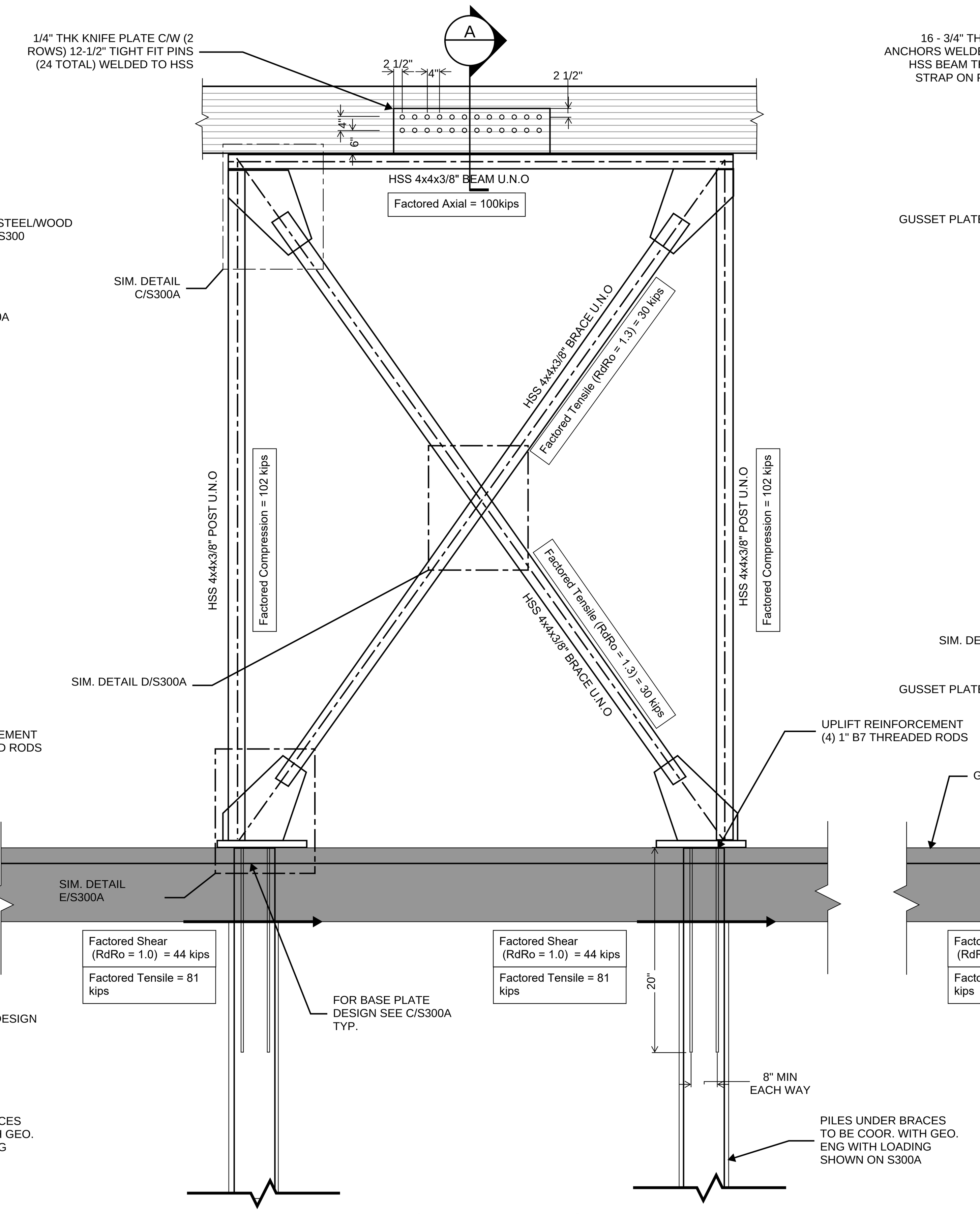
Arts and Heritage Hub

Artists' Studio Building

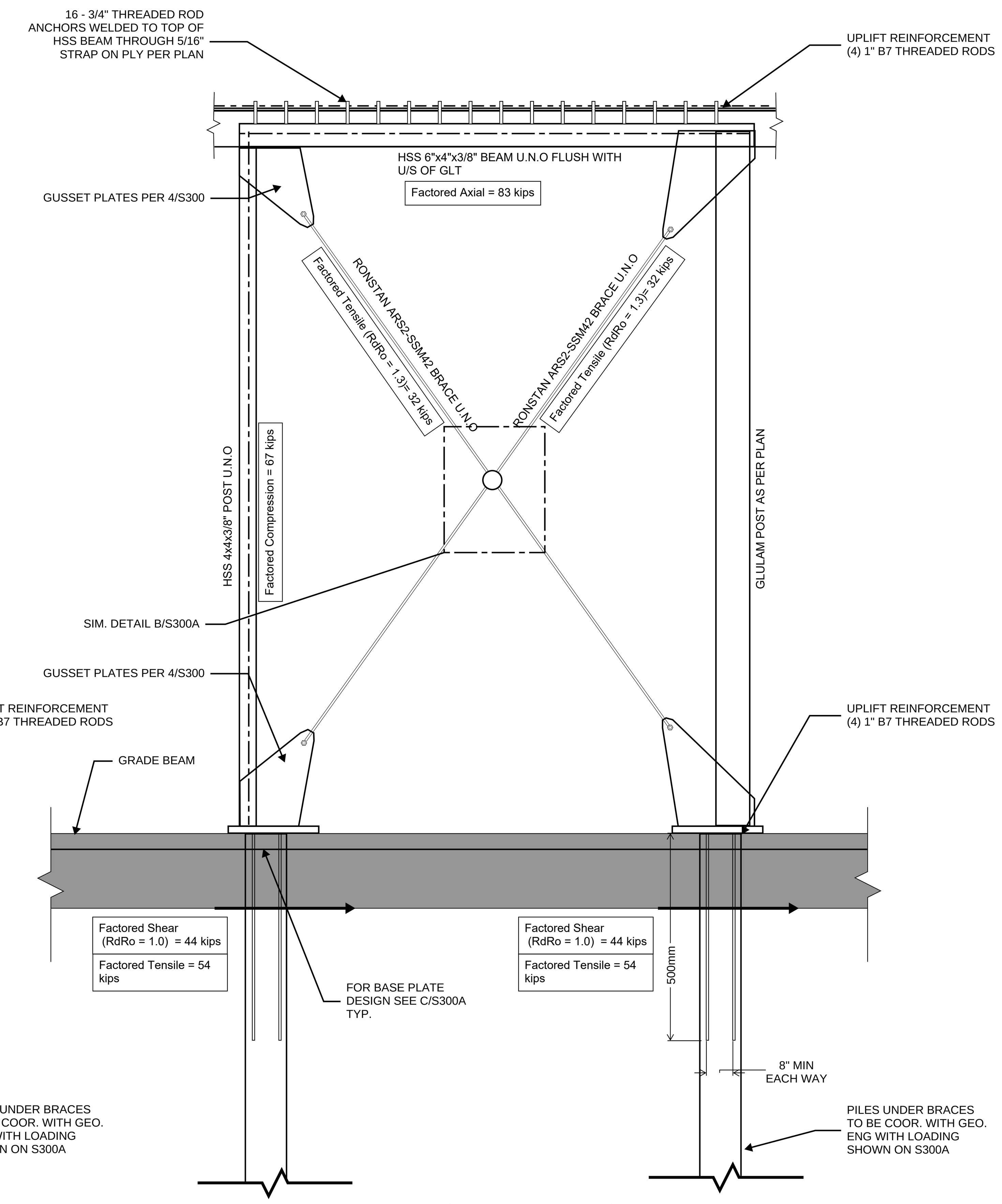
Client: Town of Ladysmith
Drawn By: NDR
Reviewed By:
Sheet Number: S300
Project Number: 2729
Sheet Name: Typical Details
Scale: n/a
Date: 2023.02.28
Issue No.: 71
Issued For: BP AND TENDER SET
Revision: –



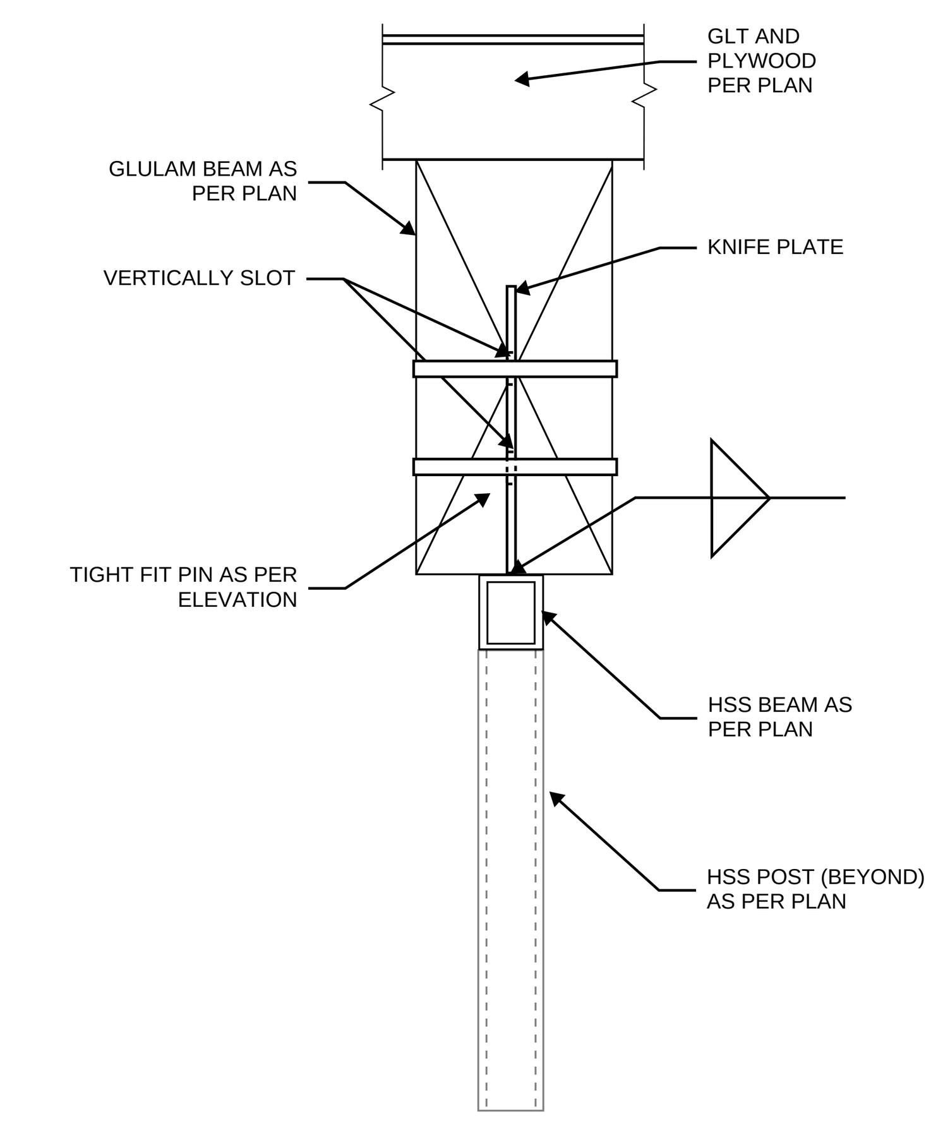
1 300.A BRACE 1 ELEVATION



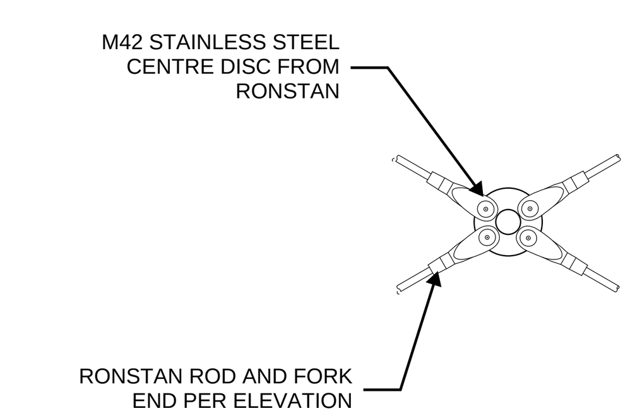
2 300.A BRACE 2 ELEVATION



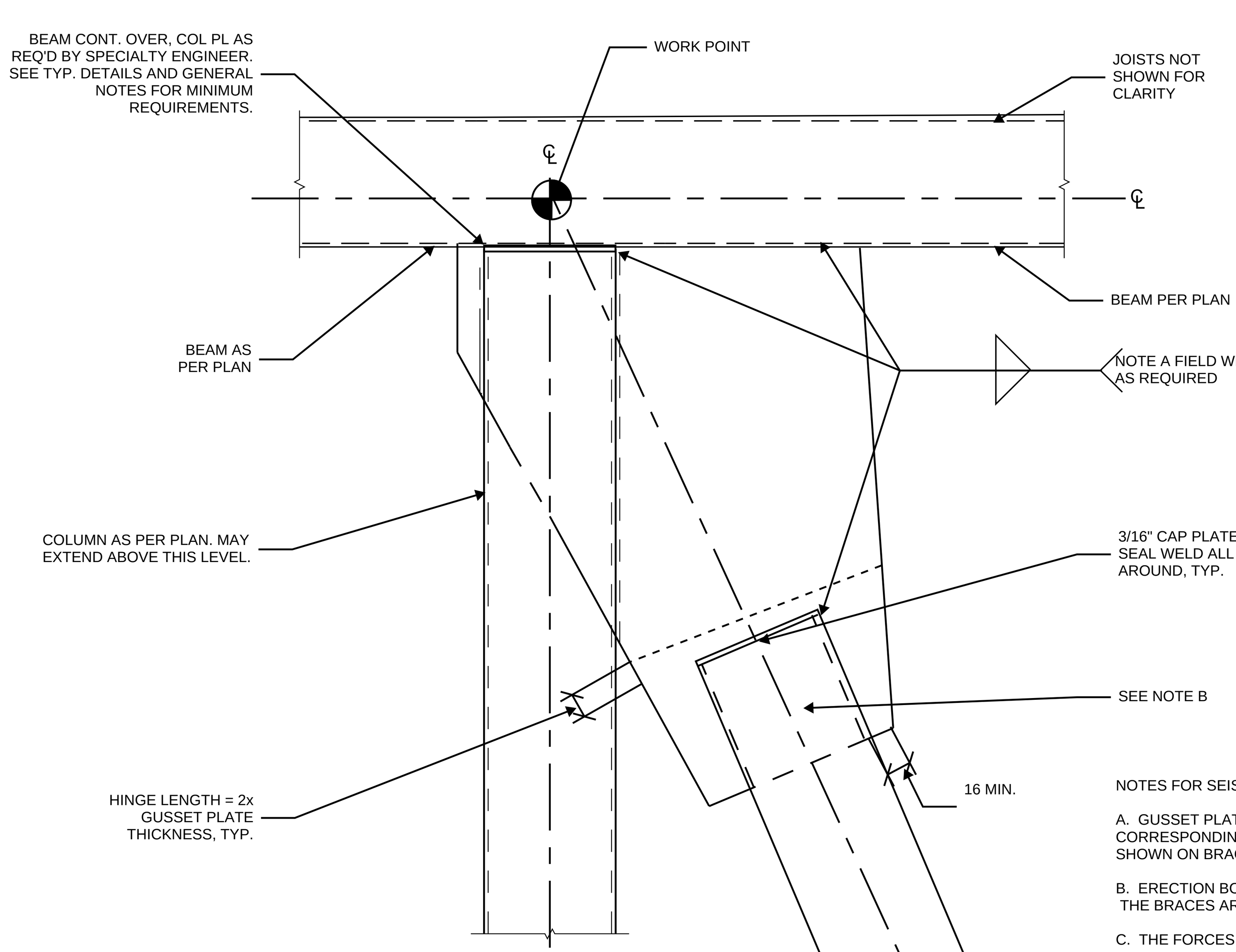
3 300.A BRACE 3 ELEVATION



A 2 KNIFE PLATE DETAIL



B 2 BRACE INTERSECTION



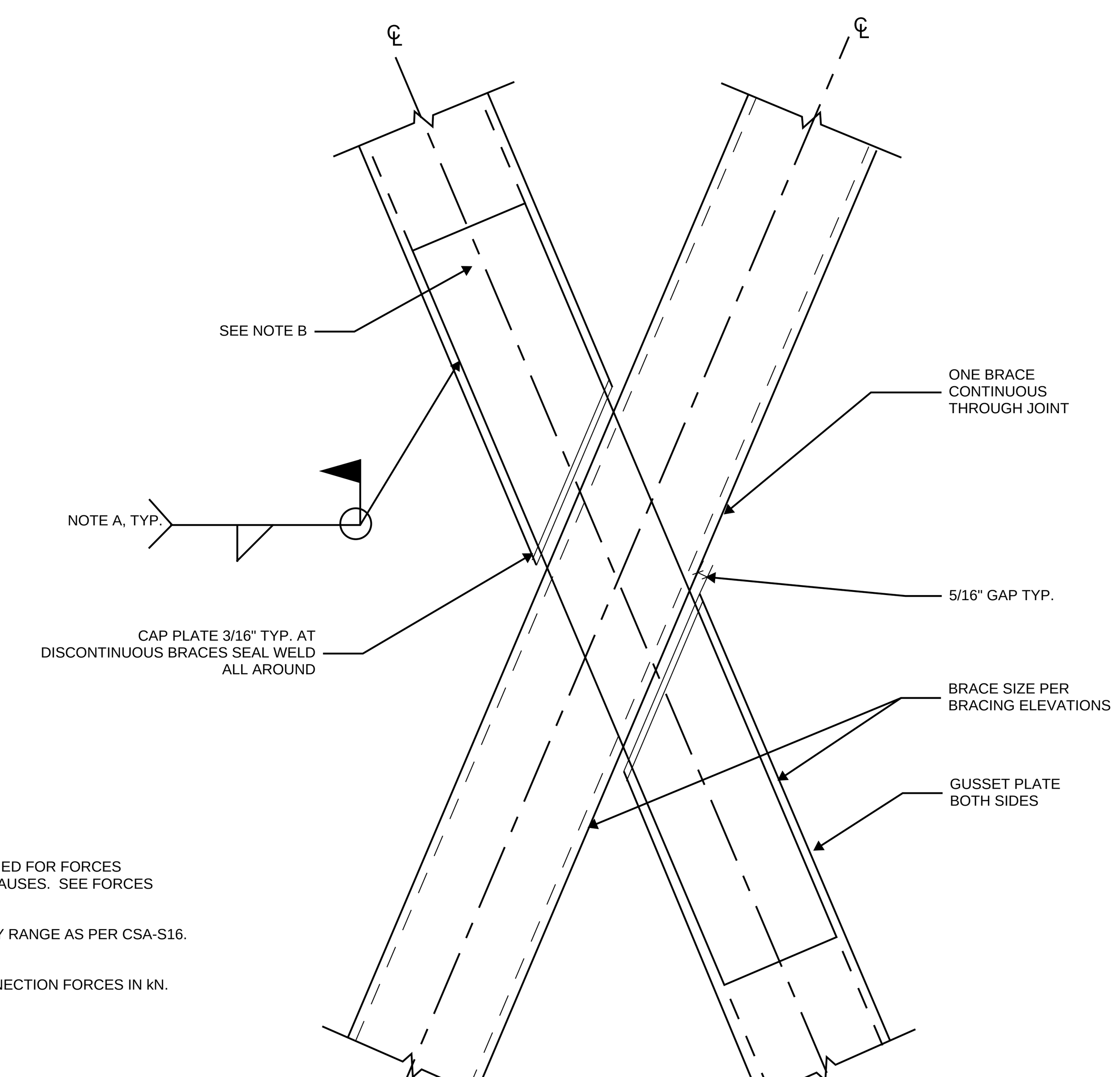
C DETAIL

NOTES FOR SEISMIC DETAILS:

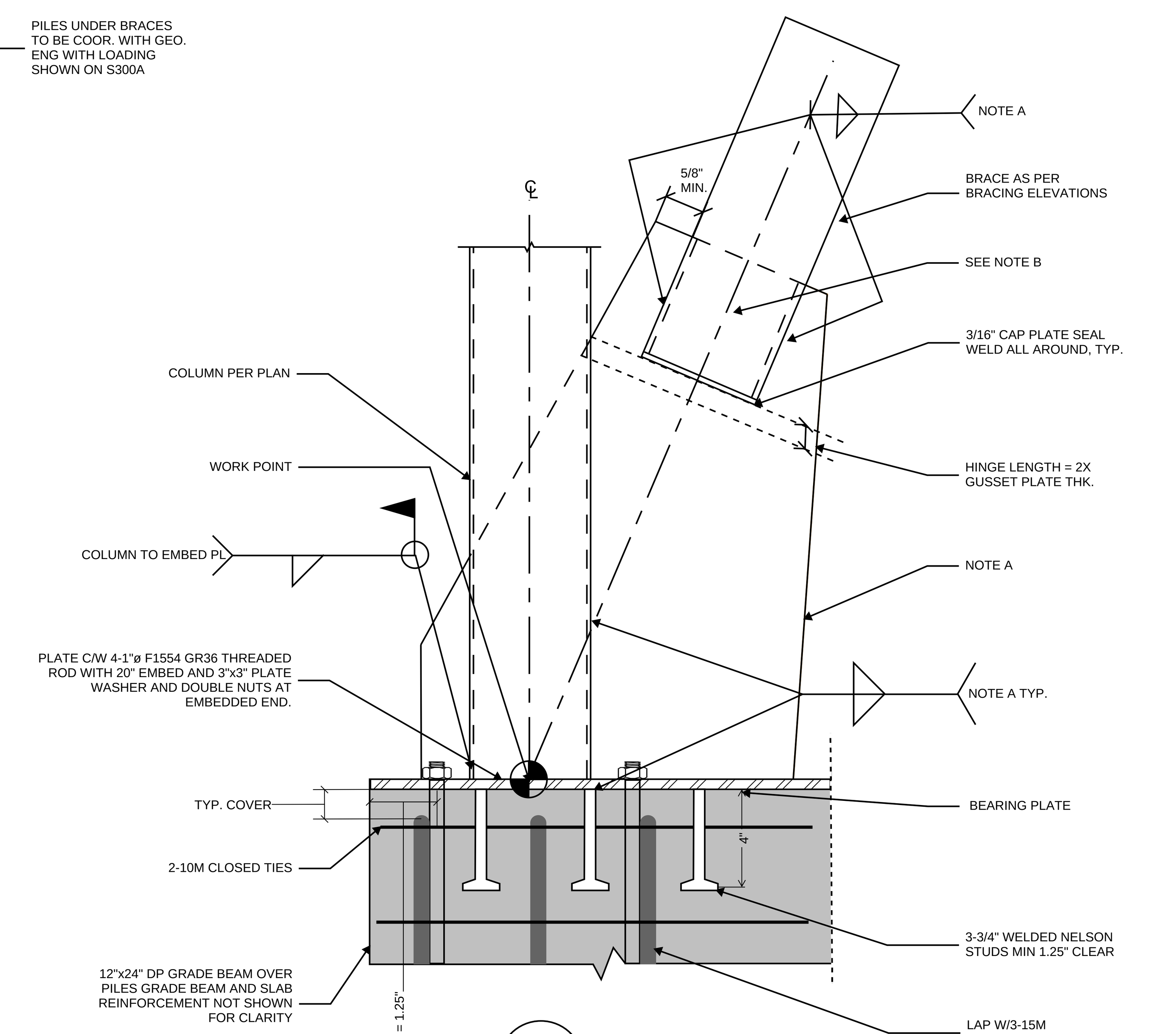
A. GUSSET PLATES AND ASSOCIATED WELDS TO BE DESIGNED FOR FORCES CORRESPONDING TO CSA-S16 CL. 27.6 AND ASSOCIATED CLAUSES. SEE FORCES SHOWN ON BRACING ELEVATIONS.

B. ERECTION BOLTS ARE NOT PERMITTED IN THIS DUCTILITY RANGE AS PER CSA-S16. THE BRACES ARE PROTECTED ZONES.

C. THE FORCES SHOWN CORRESPOND TO FACTORED CONNECTION FORCES IN kN.



D DETAIL



E TYP TYP. BRACE BASE CONNECTION DETAIL

EGBC PTP#1000216
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA N. DE RIDDER # 40955
2023-03-31

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Canada V5Y 1M2
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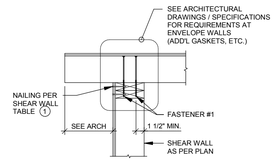
Arts and Heritage Hub

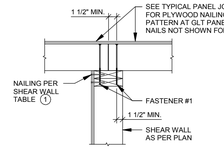
Artists' Studio Building

Client: Town of Ladysmith	Drawn By: NDR	Reviewed By:	Sheet Number: S300A
Project Number: 2729	Sheet Name: Typical Details		
Scale: n/a	Date: 2023.02.28	Issue No.: 71	Issued For: BP AND TENDER SET
Revision: –			

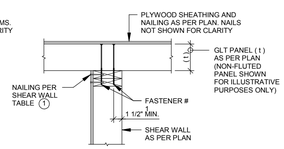
GLT PANELS SUPPORTED ON WOOD SHEAR WALLS — TYP-W-800



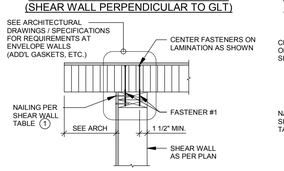
PANEL END AT SHEAR WALL SUPPORT
(SHEAR WALL PERPENDICULAR TO GLT)



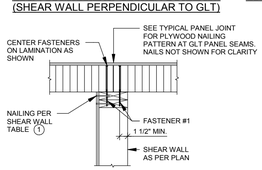
PANEL JOINT AT SHEAR WALL SUPPORT
(SHEAR WALL PERPENDICULAR TO GLT)



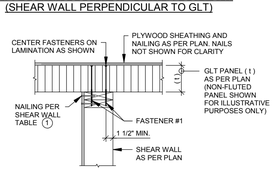
PANEL CONTINUOUS AT SHEAR WALL SUPPORT
(SHEAR WALL PERPENDICULAR TO GLT)



PANEL END AT SHEAR WALL SUPPORT
(SHEAR WALL PARALLEL TO GLT)



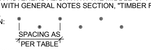
PANEL JOINT AT SHEAR WALL SUPPORT
(SHEAR WALL PARALLEL TO GLT)



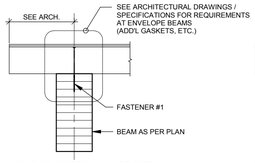
PANEL CONTINUOUS AT SHEAR WALL SUPPORT
(SHEAR WALL PARALLEL TO GLT)

FASTENER SCHEDULE				
GLT PANEL THICKNESS (t)	3"	5"	7"	9"
FASTENER #1 (SW1)	2 ROWS OF PSC 1/4"x6" @16"	2 ROWS OF PSC 1/4"x8" @16"	2 ROWS OF PSC 1/4"x9" @16"	2 ROWS OF PSC 1/4"x12" @16"
FASTENER #1 (SW2)	2 ROWS OF PSC 1/4"x6" @10"	2 ROWS OF PSC 1/4"x8" @10"	2 ROWS OF PSC 1/4"x9" @10"	2 ROWS OF PSC 1/4"x12" @10"
FASTENER #1 (SW3)	2 ROWS OF PSC 1/4"x6" @8"	2 ROWS OF PSC 1/4"x8" @8"	2 ROWS OF PSC 1/4"x8" @8"	2 ROWS OF PSC 1/4"x12" @8"

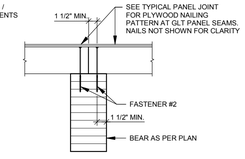
- IF GLT PANELS HAVE A FLUTED PROFILE, ENSURE FASTENERS ALIGN WITH THE MIDDLE OF FULL DEPTH LAMINATIONS.
- DETAIL AND TABLE TO BE READ IN CONJUNCTION WITH GENERAL NOTES SECTION, "TIMBER FASTENERS AND CONNECTORS".
- WHERE PANEL IS CONTINUOUS OVER TOP PLATE, ROWS OF SCREWS TO BE STAGGERED AS SHOWN:
- AT PANEL JOINTS OVER WALLS, PROVIDE 1 ROW OF FASTENERS ON EA. SIDE OF THE JOINT WITH HALF THE SPACING AS SPECIFIED IN THE TABLE (SAME TOTAL NUMBER OF SCREWS). DO NOT STAGGER.



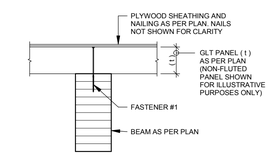
GLT PANELS SUPPORTED ON WOOD BEAMS — TYP-W-802



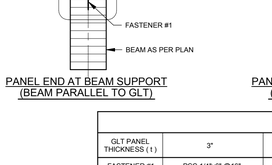
PANEL END AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)



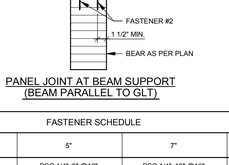
PANEL JOINT AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)



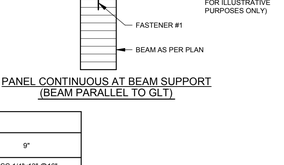
PANEL CONTINUOUS AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)



PANEL END AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)



PANEL JOINT AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)



PANEL CONTINUOUS AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)

FASTENER SCHEDULE				
GLT PANEL THICKNESS (t)	3"	5"	7"	9"
FASTENER #1	PSC 1/4"x6" @16"	PSC 1/4"x9" @16"	PSC 1/4"x10" @16"	PSC 1/4"x13" @16"
FASTENER #2	IF BEAM b < 7", PSC 1/4"x7" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 7", PSC 1/4"x6" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x10" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 175, PSC 1/4"x9" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x11" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 7", PSC 1/4"x10" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x14" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 175, PSC 1/4"x13" @16" EA. SIDE OF JOINT

- IF GLT PANELS HAVE A FLUTED PROFILE, ENSURE FASTENERS ALIGN WITH THE MIDDLE OF FULL DEPTH LAMINATIONS.
- DETAIL AND TABLE TO BE READ IN CONJUNCTION WITH GENERAL NOTES SECTION, "TIMBER FASTENERS AND CONNECTORS".

GLT PANELS SUPPORTED ON WOOD BEAMS — TYP-W-802

PANEL END AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)

PANEL JOINT AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)

PANEL CONTINUOUS AT BEAM SUPPORT
(BEAM PERPENDICULAR TO GLT)

PANEL END AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)

PANEL JOINT AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)

PANEL CONTINUOUS AT BEAM SUPPORT
(BEAM PARALLEL TO GLT)

FASTENER SCHEDULE				
GLT PANEL THICKNESS (t)	3"	5"	7"	9"
FASTENER #1	PSC 1/4"x6" @16"	PSC 1/4"x9" @16"	PSC 1/4"x10" @16"	PSC 1/4"x13" @16"
FASTENER #2	IF BEAM b < 7", PSC 1/4"x7" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 7", PSC 1/4"x6" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x10" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 175, PSC 1/4"x9" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x11" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 7", PSC 1/4"x10" @16" EA. SIDE OF JOINT	IF BEAM b < 7", PSC 1/4"x14" @16" EA. SIDE OF JOINT ANGLED TO BEAM CENTER, IF BEAM b > 175, PSC 1/4"x13" @16" EA. SIDE OF JOINT

- IF GLT PANELS HAVE A FLUTED PROFILE, ENSURE FASTENERS ALIGN WITH THE MIDDLE OF FULL DEPTH LAMINATIONS.
- DETAIL AND TABLE TO BE READ IN CONJUNCTION WITH GENERAL NOTES SECTION, "TIMBER FASTENERS AND CONNECTORS".

ECBC PIP#1000216

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
N. DE RIDDER
40995
2023-03-31

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Drawn by: bpb
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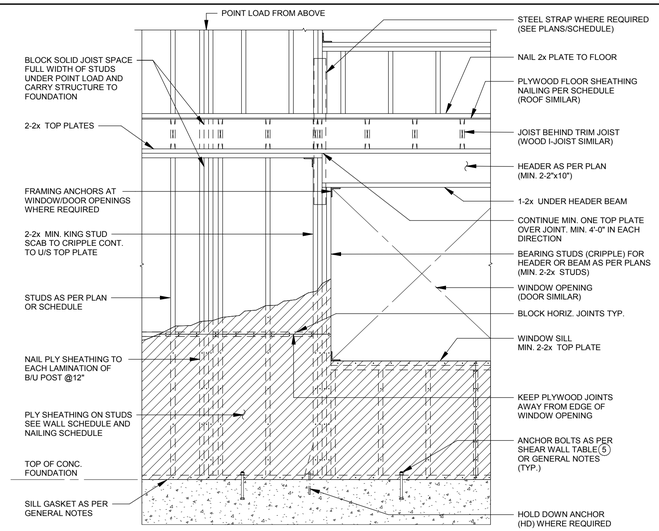
Arts and Heritage Hub

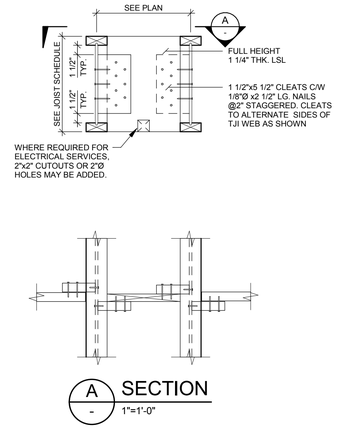
Artists' Studio Building

Client: Town of Ladysmith
Drawn By: NDR
Reviewed By:
Sheet Number: S301
Project Number: 2729
Sheet Name: Typical Details
Scale: n/a
Date: 2023.02.28
Issue No.: 71
Issued For: BP AND TENDER SET
Revision: –

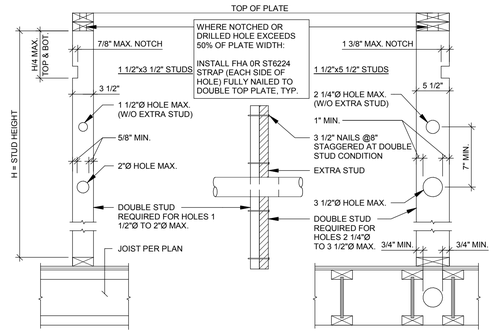
TYPICAL STUD FRAMING DETAIL — TYP-W-200



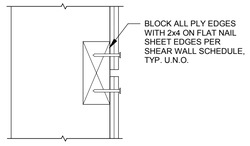
TYPICAL BLOCKING DETAIL FOR PLYWOOD WEB I-JOISTS — TYP-W-511



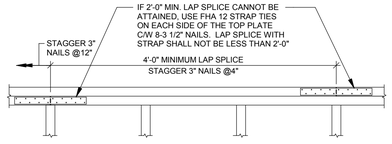
TYPICAL ALLOWABLE NOTCH / HOLES IN STUDS — TYP-W-505



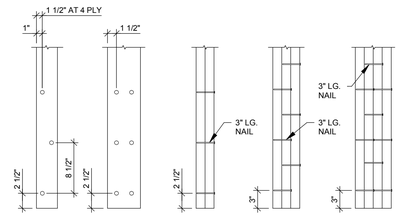
TYPICAL SHEAR WALL BLOCKING — TYP-W-509



TYPICAL TOP PLATE SPLICE — TYP-W-507



TYPICAL NAILING FOR BUILT-UP COLUMNS — TYP-W-502

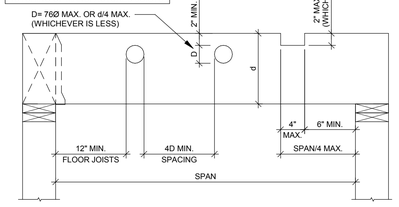


NOTE:
FOR BUILT-UP COLUMNS AT HOLD DOWN LOCATIONS, SHEATHING TO BE NAILED TO EACH BUILT-UP COLUMN LAMINATION AS PER SHEAR WALL SCHEDULE (1).

TYPICAL ALLOWABLE PENETRATIONS IN 2x FLOOR JOIST / ROOF RAFTERS — TYP-W-506

FOR PENETRATIONS IN BEAMS VERIFY WITH ENGINEER (FAST + EPP) PRIOR TO CUTTING AND NOTCHING.

REFER TO MANUFACTURER'S INFORMATION FOR UTILITY HOLES AND NOTCHING OF MANUFACTURED JOISTS.



ECBC PP#1000216

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — N. DE RIDDER # 40958

2023-03-31

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mail@fastepp.com
Project No: 2729
Drawn by: bpb
Designed by: bpb

Arts and Heritage Hub

Artists' Studio Building

Client: Town of Ladysmith			Drawn By: NDR	Reviewed By:	Sheet Number: S302
Project Number: 2729	Sheet Name: Typical Details				
Scale: n/a	Date: 2023.02.28	Issue No.: 71	Issued For: BP AND TENDER SET		Revision: –

LADYSMITH ARTS AND HERITAGE HUB

ISSUED FOR BP & TENDER

SITE: 610, 612, 614 AND 616 OYSTER BAY ROAD RPE PROJECT NUMBER: 20635-N

SANITARY LOAD SUMMARY

LOADS	FIXTURE UNITS FU	PIPE SIZE IN
FIXTURE LOAD	31.500	4"Ø
TOTAL		
SIZE AND SLOPE REQUIRED:		4"ø @ 1.0%
ADDITIONAL INFORMATION:		

WATER LOAD SUMMARY

SUPPLY PRESSURE (KPA):		
SIZING METHOD USED:	SMALL COMMERCIAL	
LOADS	PEAK LOAD GPM	PIPE SIZE REQUIRED IN
TOTAL BUILDING	46	2"Ø
ADDITIONAL INFORMATION:		

STORM LOAD SUMMARY

RAIN LOAD (8mm/15 min)			FROM BCBC 2018
LOADS	AREA FT2	AREA M2	LOAD L
ROOF	3907	363	3630
TOTAL			3630
SIZE AND SLOPE REQUIRED:			4"ø @ 1.0%
ADDITIONAL INFORMATION: STORM RAIN LOAD AS PER BCBC 2018			

FIXTURES CONNECTION SCHEDULE

TAG	FIXTURE	TYPE	SANITARY FU	SANITARY SIZE	DOMESTIC COLD WATER FU	DOMESTIC COLD WATER SIZE	DOMESTIC HOT WATER FU	DOMESTIC HOT WATER SIZE
	HOSE BIBB - 3/4"ø	-	-	-	6	3/4"ø	-	-
	LAVATORY - 8.3LPM OR LESS	PUBLIC	1	1-1/4"ø	1	1/2"ø	1.50	1/2"ø
	SINK - KITCHEN DOMESTIC	PUBLIC	1.50	1-1/2"ø	3	1/2"ø	3	1/2"ø
	SINK - SERVICE OR MOP BASIN	PUBLIC	3	3"Ø	2.25	1/2"ø	2.25	1/2"ø
	WATER CLOSET - FLUSH VALVE	PUBLIC	6	4"ø	**	1ø	-	-
	DISHWASHER	PUBLIC	1	1-1/2"ø	1.4	1/2"ø	-	-
	* DENOTES FLOW AND/OR PIPE SIZING TO BE MEET MANUFACTURERS INSTALLATION REQUIREMENTS							
	** FOR FLUSH VALVE SIZING REFER TO TABLES 2.6.3.2-B AND 2.6.3.2-C IN THE 2018 BC PLUMBING CODE							

ABBREVIATION LIST

BB	BASEBOARD HEATER
C/W	COMPLETE WITH
E/A	EXHAUST AIR
EF	EXHAUST FAN
ET	EXPANSION TANK
HP	HEAT PUMP
LPG	LOW PRESSURE GAS
HPL	HIGH PRESSURE LIQUID
O/A	OUTDOOR AIR
R/A	RETURN AIR
S/A	SUPPLY AIR
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DW	DISHWASHER
HB	HOSE BIB
LAV	LAVATORY
JS	JANITOR SINK
SK	KITCHEN SINK
SS	SERVICE SINK
RR	REFRIGERANT RETURN
RS	REFRIGERANT SUPPLY
WC	WATER CLOSET

PIPING AND PLUMBING SYMBOL LEGEND

	BALL VALVE
	HOSE BIB
	MECHANICAL PUMP
	PIPE BREAK
	PIPE CAP
	PIPE ELBOW DOWN
	PIPE ELBOW/TEE UP
	PIPE TEE DOWN
	PIPE TRAP
	PIPE UNION
	PLUMBING PIPE CLEANOUT TO GRADE 2
	SANITARY VENT UP
	VALVE CHECK
	FLOOR DRAIN
	FUNNEL FLOOR DRAIN

ANNOTATION SCHEDULE

QUANTITY / TAG / COMMENTS	EQUIPMENT TAG
20ø	PIPE TAG
QUANTITY / TAG / SIZE / FLOW / COMMENTS	AIR TERMINAL TAG

MECHANICAL SYMBOL LEGEND

	ROUND DUCT
	SQUARE SUPPLY DUCT - DOWN AN UP
	SQUARE RETURN DUCT - DOWN AND UP
	SQUARE EXHAUST DUCT - DOWN AND UP
	ROUND DUCT DOWN (TEE)
	MITERED DUCT ELBOW W/ VANES
	ANGLED DUCT ELBOW W/ VANES
	DUCT ELBOW 1R
	DUCT ELBOW 1.5R
	DUCT ELBOW 2.5R
	DUCT WITH EXTERNAL INSULATION
Ø RECT.	DUCT BREAK
	DUCT TRANSITION
	DUCT TAKEOFF
	SUPPLY GRILLE
	RETURN GRILLE
	EXHAUST GRILLE
	DOOR GRILLE
UC	DOOR UNDERCUT
	FLOW DIRECTION ARROW
S1	CEILING FAN WALL SWITCH
S2	OVERHEAD DOOR CONTACT SENSOR
RT	ROOM TEMPERATURE
T	THERMOSTAT
	BALANCE DAMPER
M	MECHANICAL DUCT MOTORIZED DAMPER
	MECHANICAL EQUIPMENT FORCE FLOW

Sheet List Table

Sheet Number	Sheet Title
M-0	COVER SHEET
M-1	PLUMBING - FOUNDATION PLAN
M-2	MAIN FLOOR PLAN - PLUMBING & MAIN FLOOR PLAN VRF PIPING
M-3	MAIN FLOOR PLAN - HVAC & ROOF PLAN - MECHANICAL
M-4	SECTIONS AND SCHEMATICS
M-5	MECHANICAL SCHEDULES

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ph. 250.585.0222

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	MAR. 31, 2023	ISSUED FOR BP & TENDER	KS
3	FEB. 17, 2023	ISSUED FOR 95% CD'S	KS
2	FEB. 02,2023	ISSUED FOR 75% CD'S	KS
1	NOV. 21, 2022	ISSUED FOR COORDINATION	KS

REVISIONS:

SEAL:

Association of Professional Engineers and Geoscientists of the Province of British Columbia
A. J. MULLALEY
PROFESSIONAL LICENSEE ENGINEERING
Licence 170488

2023-03-31

Permit to Practice #1000700

CLIENT:

PROJECT:

LADYSMITH ARTS AND HERITAGE HUB

610, 612, 614 AND 616 OYSTER BAY ROAD
LADYSMITH, BC V9G 1B8

DRAWING NAME:

COVER SHEET

PROJECT NUMBER:

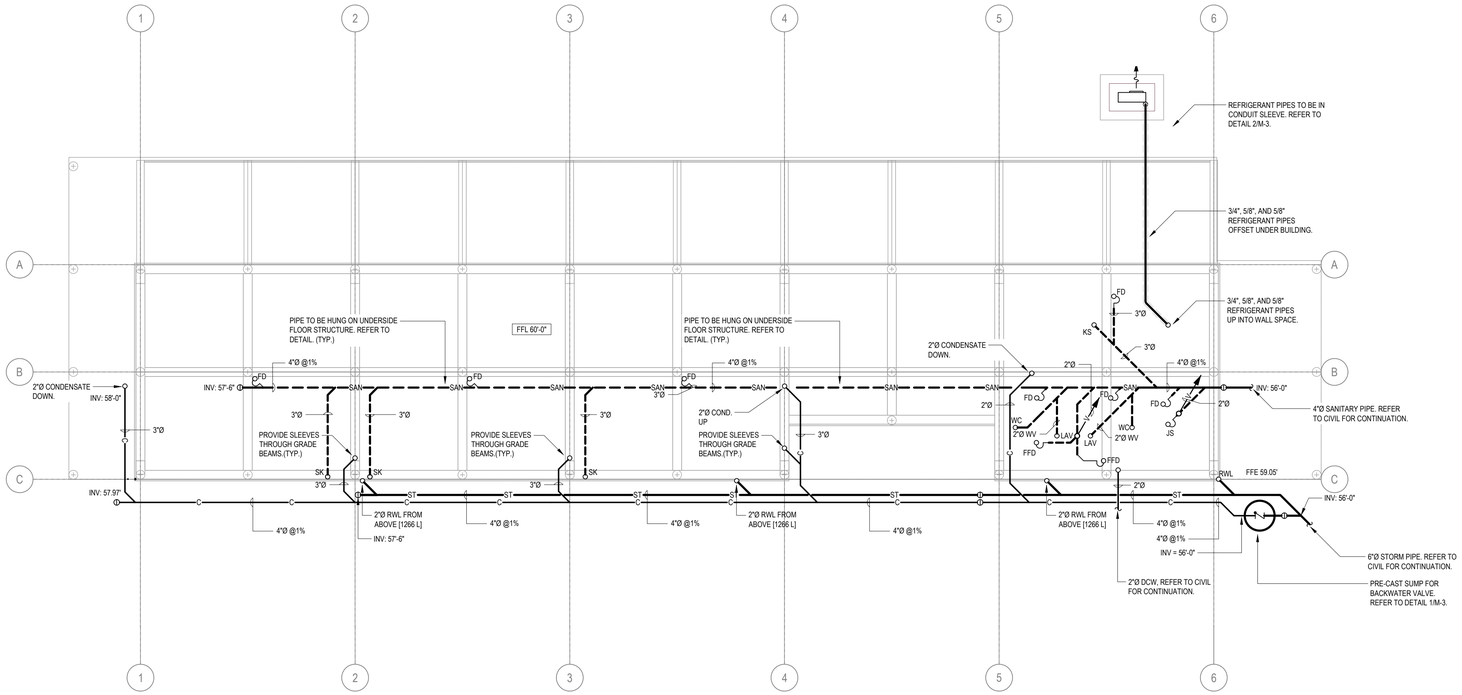
20635-N

DRAWN BY:	KS
DESIGNED BY:	SC
APPROVED BY:	AM
SCALE:	AS INDICATED

DRAWING:

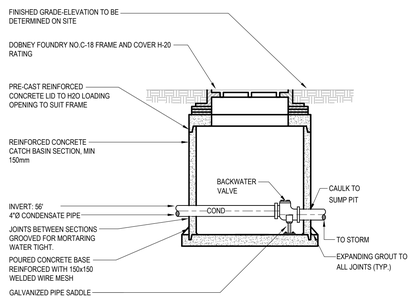
M-0

3/31/2023 8:44 AM



NORTH

2 / M-1 FOUNDATION PLAN - PLUMBING
1/8" = 1'-0"

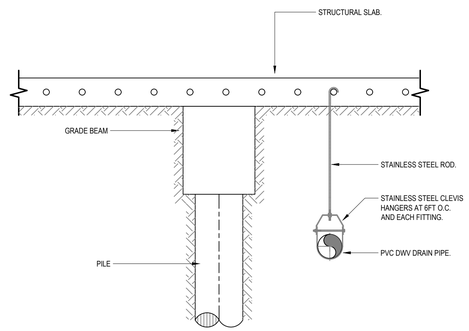


NOTES:

1. INLET AND DISCHARGE INVERT ELEVATIONS TO BE CONFIRMED ON-SITE PRIOR TO INSTALLATION.
2. FOR SUMPS MORE THAN 1200mm DEEP, PROVIDE 12mm GALVANIZED STEEL RINGS CAST INTO WALL AT 300mm SPACING.

DIMENSIONS:
150Ø SEWER = 1050Ø

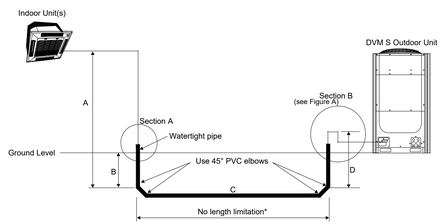
2 / M-1 BACKWATER VALVE SUMP DETAIL
N.T.S.



NOTE:
1. ALL UNDERSLAB PIPE TO BE SUSPENDED FROM UNDERSIDE OF SLAB.
2. PROVIDE SUPPORTS AT INTERNALS. RECOMMENDED BY PVC DWV MANUFACTURER.

3 / M-1 UNDERGROUND PIPE HANGER DETAIL
N.T.S.

Standard refrigerant pipe
Buried refrigerant piping in watertight drain pipe



NOTES:

1. The pipes must be buried below frost line.
Adjust depth accordingly below frost line depending on traffic volume and type above buried pipes.

2. All buried refrigerant pipes and communication wires must be installed in a watertight, underground conduit pipe. The open ends of the watertight pipe must be sealed at the ends to prevent water and debris from entering. Entry of water will impact system efficiency and can cause damage to the equipment. See Figure A and Figure B for more details.

3. If the watertight pipe seams or joints are underground, follow the manufacturers recommendation for properly sealing all connections.

4. Only one system's refrigerant pipes per watertight pipe.

4 / M-1 BURIED REFRIGERANT LINES DETAIL
1/8" = 1'-0"

Figure A

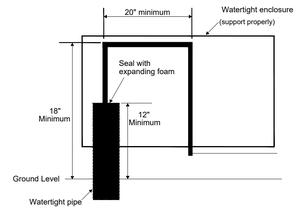
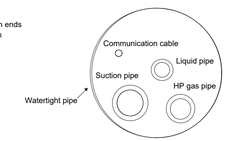


Figure B



Refer to installation manual for pipe insulation specifications.

3/10/2023 9:44 AM

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Licence 170480
2023-03-31

Permit to Practice #1000700

CLIENT:

PROJECT:

LADYSMITH ARTS AND HERITAGE HUB

610, 612, 614 AND 616 OYSTER BAY ROAD
LADYSMITH, BC V9G 1B8

DRAWING NAME:

PLUMBING - FOUNDATION PLAN

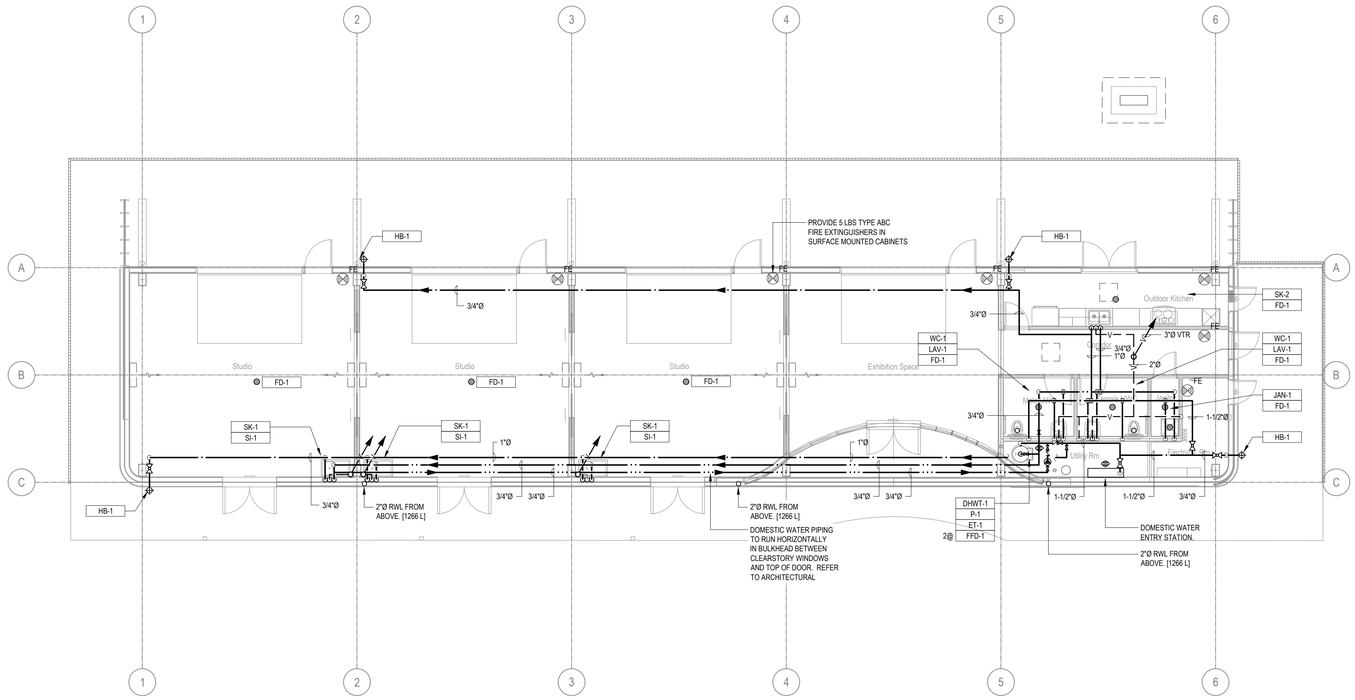
PROJECT NUMBER:

20635-N

DRAWN BY:	KS
DESIGNED BY:	SC
APPROVED BY:	AM
SCALE:	AS INDICATED

DRAWING:

M-1

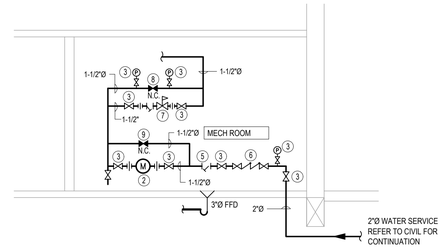


NORTH

1 / M-2 PLUMBING - MAIN FLOOR

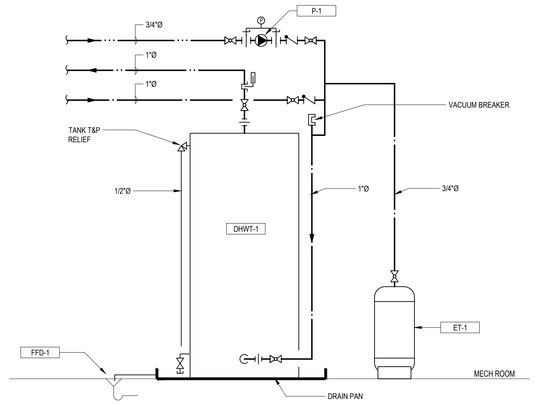
1/8" = 1'-0"

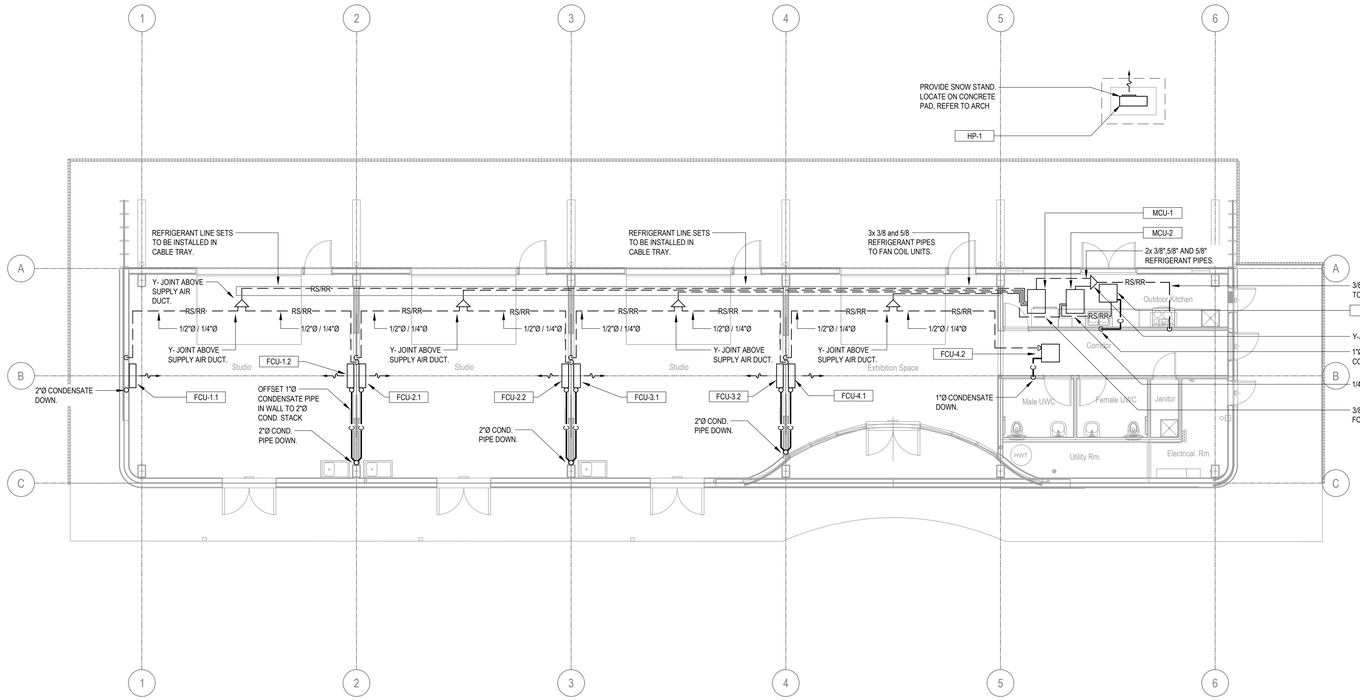
1. WATER PRESSURE GAUGE
2. 1-1/2" SENSUS WATER METER AS PER T.O.L. REQUIREMENTS C/W TOUCH READ AT ACCESSIBLE LOCATION
3. GATE VALVE
4. BALL VALVE
5. STRAINER
6. DOUBLE CHECK VALVE ASSEMBLY
7. FULL FLOW PRV WITH STRAINER
8. GLOBE VALVE BYPASS
9. 1-1/2"Ø BALL VALVE C/W TOWN OF LADYSMITH LOCK



3 / M-2 WATER ENTRY SCHEMATIC

N.T.S.





NORTH

2 / M-2 VRF PIPING - MAIN FLOOR

1/8" = 1'-0"

4 / M-2 M-4 PLUMBING - MAIN FLOOR(3)

N.T.S.

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REVISIONS:

SEAL:

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Permit to Practice #1000700

CLIENT:

PROJECT:

LADYSMITH ARTS AND HERITAGE HUB

610, 612, 614 AND 616 OYSTER BAY ROAD
LADYSMITH, BC V9G 1B8

DRAWING NAME:

MAIN FLOOR PLAN - PLUMBING & MAIN FLOOR PLAN VRF PIPING

PROJECT NUMBER:

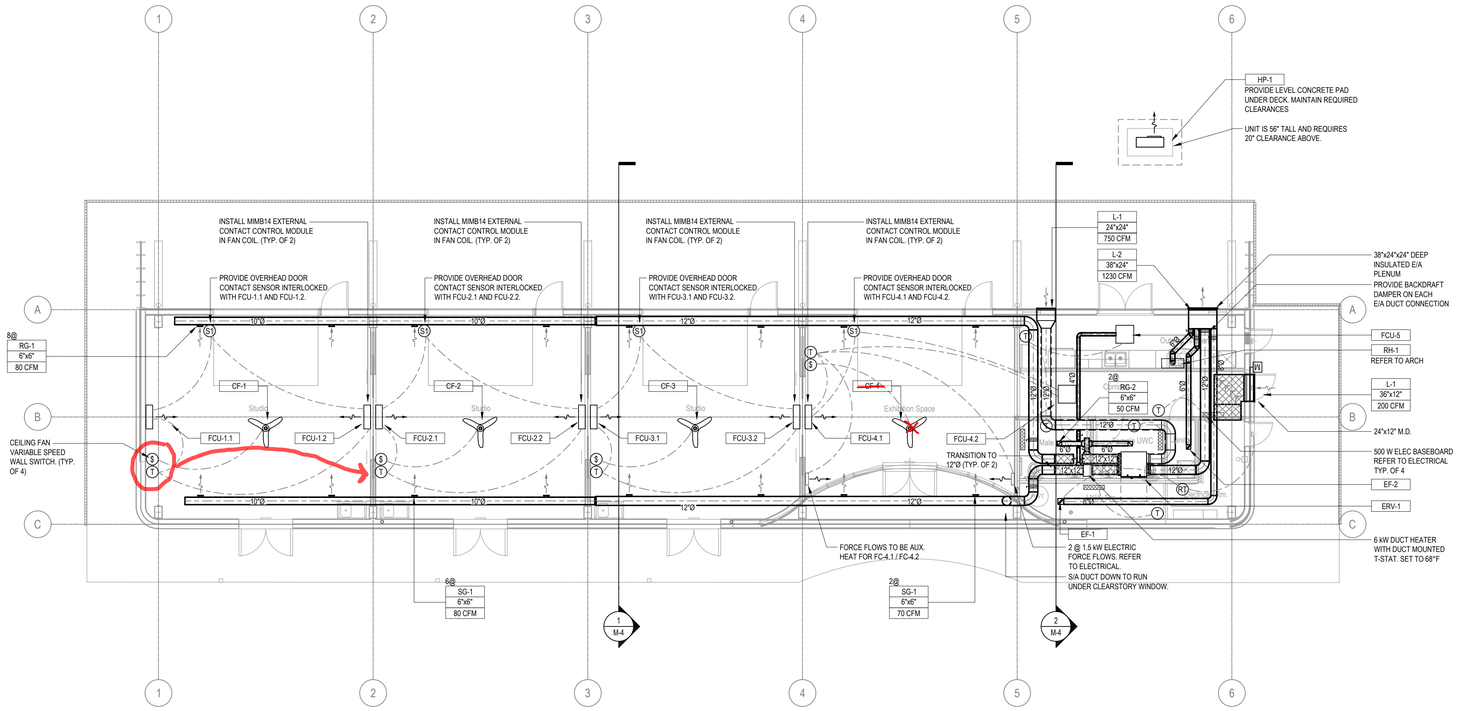
20635-N

DRAWN BY:	KS
DESIGNED BY:	SC
APPROVED BY:	AM
SCALE:	AS INDICATED

DRAWING:

M-2

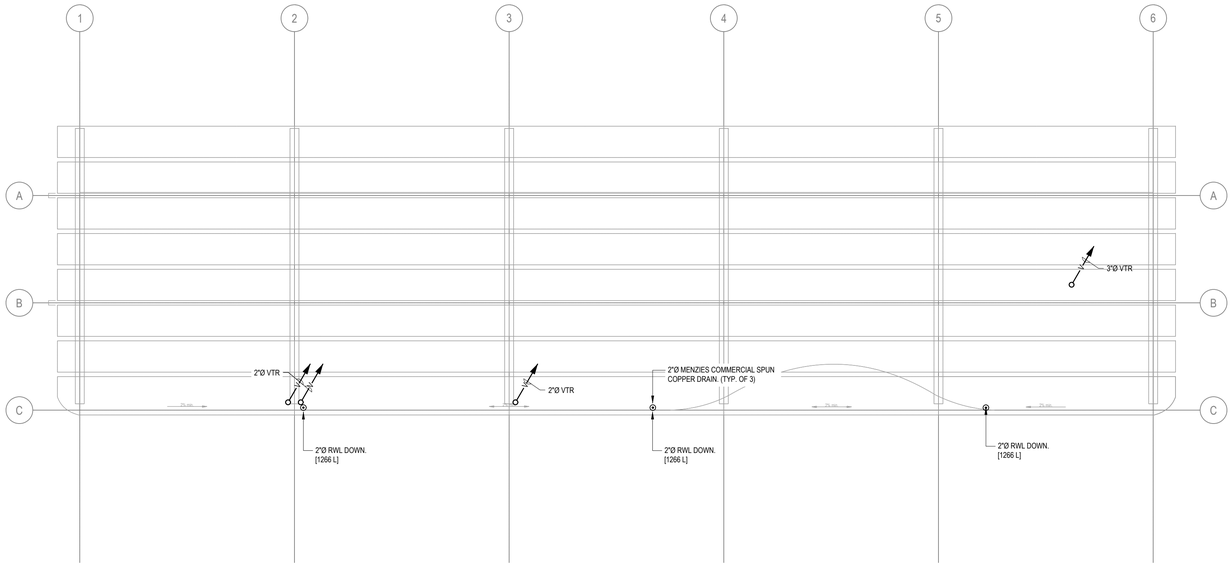
3/10/2023 8:44 AM



NORTH

1 / M-3 HVAC - MAIN FLOOR

1/8" = 1'-0"



NORTH

2 / M-3 ROOF PLAN - MECHANICAL

1/8" = 1'-0"

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LADYSMITH, BC V9G 1B8

DRAWING NAME:

MAIN FLOOR PLAN - HVAC & ROOF PLAN - MECHANICAL

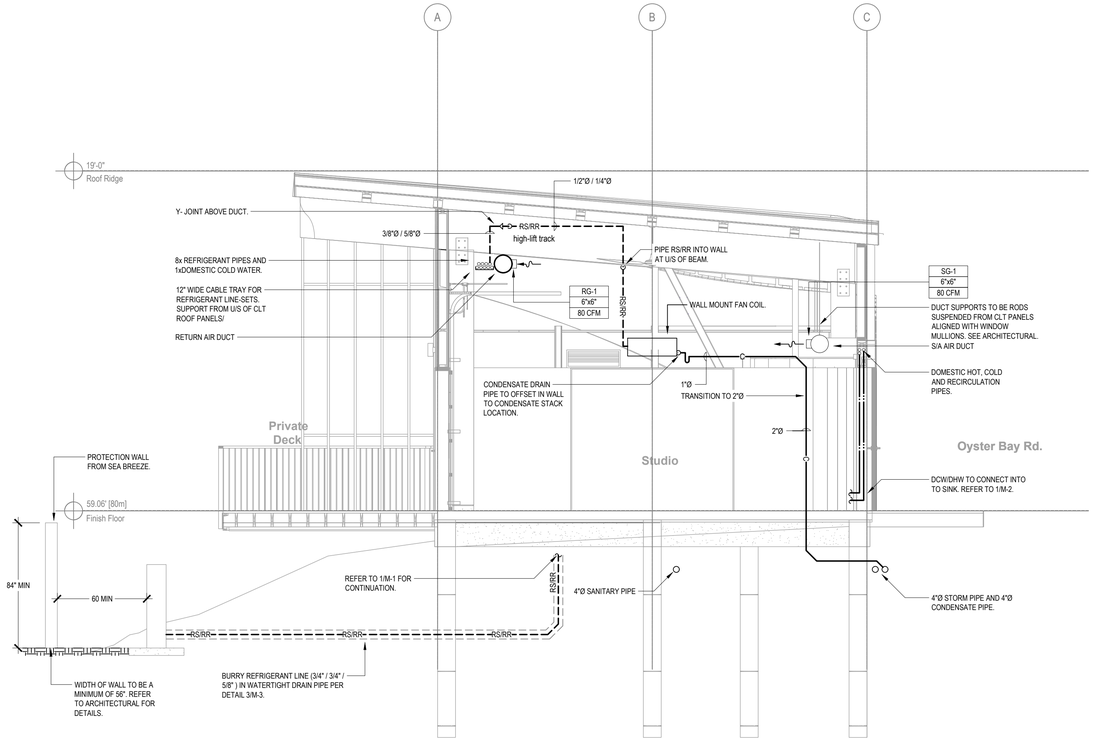
PROJECT NUMBER:

20635-N

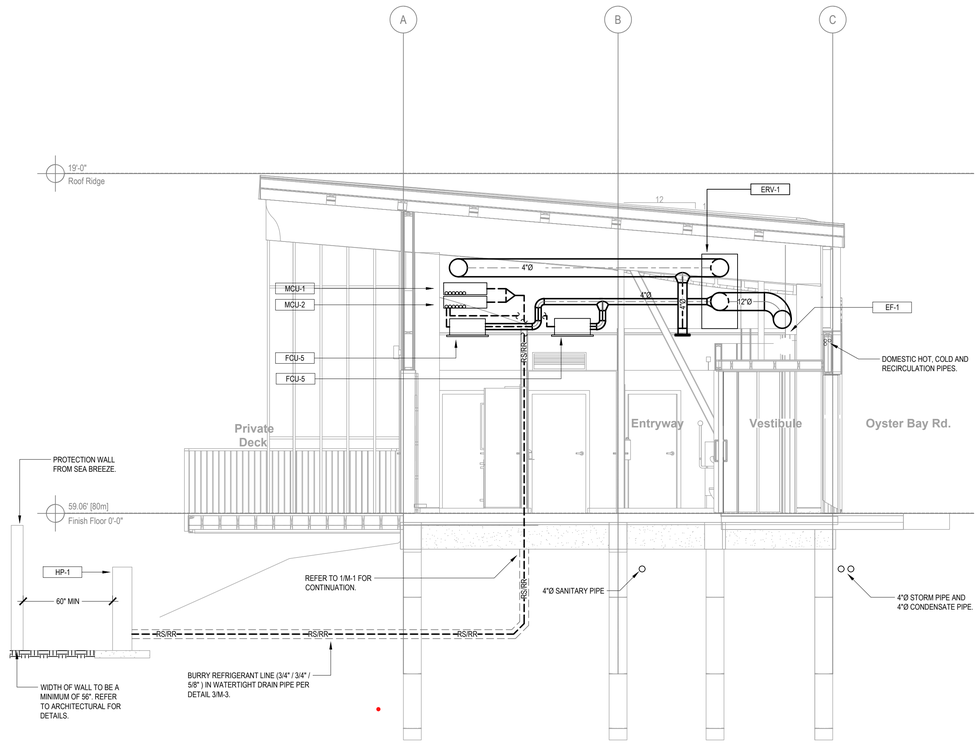
DRAWN BY:	KS
DESIGNED BY:	SC
APPROVED BY:	AM
SCALE:	AS INDICATED

DRAWING:

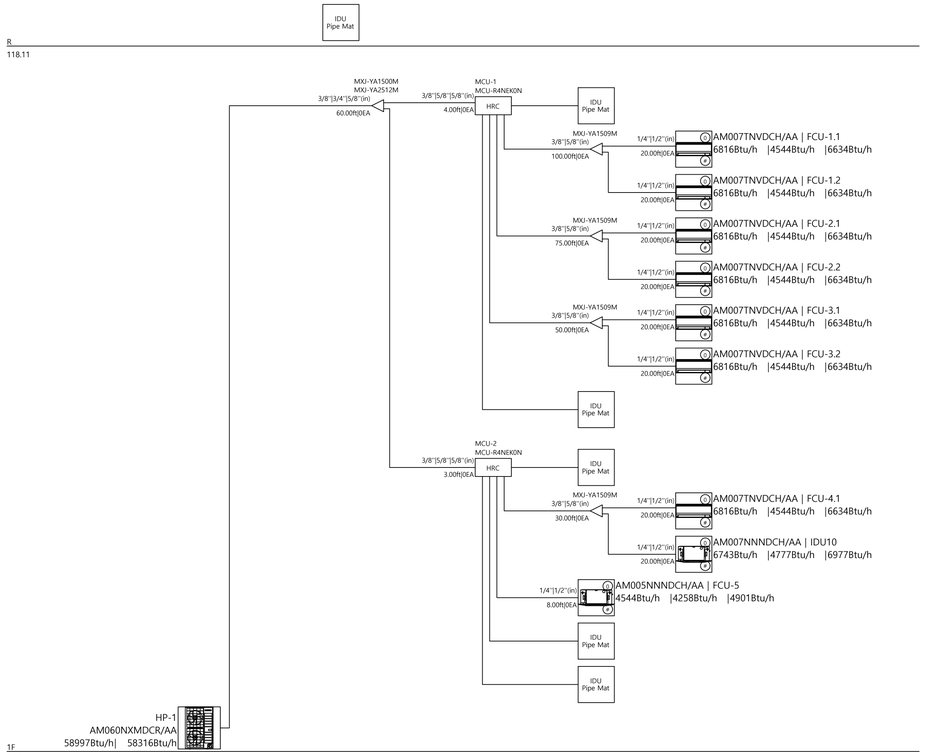
M-3



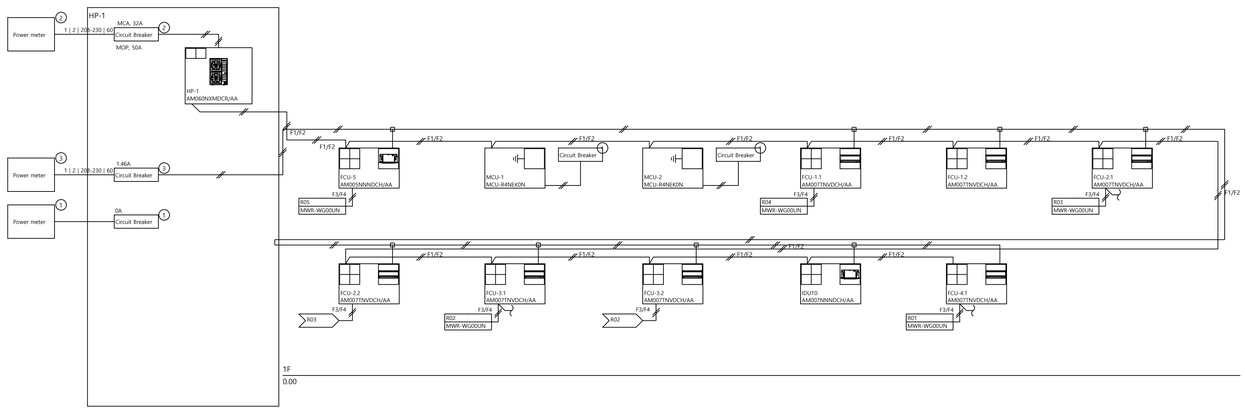
1 M-4 SECTION VIEW
1/4" = 1'-0"



2 M-4 SECTION VIEW
1/4" = 1'-0"



3 M-4 HP-1 REFRIDGERANT PIPING SCHEMATIC
1/8" = 1'-0"



4 M-4 HP-1 WIRING AND CONTROLLER SCHEMATIC
N.T.S.

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2023-03-31

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LADYSMITH ARTS AND HERITAGE HUB

610, 612, 614 AND 616 OYSTER BAY ROAD
LADYSMITH, BC V9G 1B8

DRAWING NAME:

SECTIONS AND SCHEMATICS

PROJECT NUMBER:

20635-N

DRAWN BY:	KS
DESIGNED BY:	SC
APPROVED BY:	AM
SCALE:	AS INDICATED

DRAWING:

M-4

AIR TERMINAL SCHEDULE

DESIGNATION	SYSTEM	MANUFACTURER	MODEL	BALANCING DAMPER	COMMENTS
UNITS					
SG-1	SUPPLY AIR	EH PRICE	520D/F/A/B12	Y	C/W BALANCE DAMPER
RG-1	RETURN AIR	EH PRICE	535D/F/L//B12	Y	C/W BALANCE DAMPER
L-1	OUTSIDE AIR	EH PRICE	DE439	N	
L-2	EXHAUST	EH PRICE	DE439	N	

ADDITIONAL INFORMATION:

EXPANSION TANK SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	DUTY	CAPACITY	MAX PRESSURE	DIMENSIONS (IN)		WEIGHT	COMMENTS
UNITS					GAL	PSIG	DIAMETER	HEIGHT	LBS	
ET-1	AMTROL	ST-30VC-DD	STORAGE	DOMESTIC WATER	16	150	15	25	48	1

NOTE1 :HEAVY DUTY BUTYL DIAPHRAGM, ATTACHMENTS FOR SEISMIC RESTRAINTS, CONTRACTOR TO PROVIDE SEISMIC RESTRAINT FOR TANK, ASME RATED 150 PSI, FOR POTABLE WATER, LINER, ANTIMICROBIAL POLYPROPYLENE W/ ANTI-LEGIONELLA PROTECTION, TURBULATOR WATER CIRCULATOR, SHRADER VALVE W/ EPDM SEAT, 379 kPa PRE-CHARGE, FINISH: RED OXIDE PRIMER, 3/4"ø CONNECTION

EXHAUST FAN SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	SERVING	EXHAUST AIRFLOW	ESP	ELECTRICAL			POWER	FAN SPEED	NOISE LEVEL	CONTROL	WEIGHT	COMMENTS
UNITS					CFM	IN WG	VOLTAGE	PHASE	FREQUENCY	HP	RPM	SONES		LBS	
EF-1	GREENHECK	SP-B200	MECHANICAL ROOM	MECHANICAL ROOM	200	0.275	115	1	60	0.03	980	4.5	GAS DETECTION	225	1
EF-2	GREENHECK	SP-B50	JANITORS ROOM	JANITORS ROOM	100	0.136	115	1	60	0.02	580	0.8	TIMER	9	1

NOTE 1: HANGING VIBRATION ISOLATION KIT, ADJUSTABLE MOUNTING BRACKET, ELECTRICAL DISCONNECT SWITCH , BACKDRAFT DAMPER

CEILING FAN SCHEDULE (OWNER SUPPLIED)

DESIGNATION	MANUFACTURER	MODEL	LOCATION	CAPACITY	AREA OF SPACE	DIAMETER	MAX FAN SPEED	WATTS MAX/MIN	ELECTRICAL			WEIGHT	SOUND	COMMENTS
UNITS				CFM	FT2	IN	RPM	kW	VOLTAGE	PHASE	FREQUENCY	LBS		
CF-1	BIG ASS FANS	HAIKU (BAMBOO)	STUDIO 104	1389-6713	530	52	200	2.2/15.6	120	1	60	13	35 dBA	1
CF-2	BIG ASS FANS	HAIKU (BAMBOO)	STUDIO 103	1389-6713	530	52	200	2.2/15.6	120	1	60	13	35 dBA	1
CF-3	BIG ASS FANS	HAIKU (BAMBOO)	STUDIO 102	1389-6713	530	52	200	2.2/15.6	120	1	60	13	35 dBA	1
CF-4	BIG ASS FANS	HAIKU (BAMBOO)	ENTRYWAY 101	1389-6713	450	52	200	2.2/15.6	120	1	60	13	35 dBA	1

NOTE 1: PROVIDE UNIVERSAL MOUNT FOR SLOPED CEILINGS AND PROVIDE VARIABLE SPEED WALL SWITCH

PUMP SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	DUTY	FLOW	PUMP HEAD	MOTOR POWER	ELECTRICAL			CONTROLS	COMMENTS
UNITS					GPM	FT	W	VOLTAGE (V)	PHASE	FREQUENCY (Hz)		
P-1	BELL & GOSSETT	PL-36	MECH ROOM	DOMESTIC HW RECIRCULATION	5	10	FRAC	120	1	60	AQUASTAT	NOTES 1

NOTE 1: ALL BRONZE CONSTRUCTION, PIPE MOUNTED AQUA-STAT + TIME-CLOCK CONTROL

ENERGY RECOVERY VENTILATOR SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	SUPPLY AIRFLOW	EXHAUST AIRFLOW	ESP	SENSIBLE EFFECTIVENESS		ELECTRICAL			MCA	MOP	DIMENSIONS (IN)			WEIGHT	COMMENTS
UNITS					CFM	CFM	IN WG	SUMMER	WINTER	VOLTAGE	PHASE	FREQUENCY	AMPS	AMPS	WIDTH	LENGTH	HEIGHT	LBS	
ERV-1	RENEWAIRE	HE-1XJINV-S35HH---ANT---L	ABOVE FEMALE UWC	BUILDING	750	750	0.85	76.9 %	76.9 %	208	3	60	5.2	5.2	23-3/4"	40-3/8"	50-3/4	272	1,2, 3

NOTE 1: PROVIDE TIMECLOCK FOR CONTROL. COORDINATE SCHEDULE WITH BUILDING OPERATOR
NOTE 2: PROVIDE MERV-13 FILTERS
NOTE 3: ECM MOTOR OPTION

ELECTRIC DOMESTIC HOT WATER TANK SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	DUTY	CAPACITY	ENTERING WATER	LEAVING WATER	RECOVERY RATE @ TEMP. RISE	INPUT POWER	FLA	ELECTRICAL			DIMENSIONS	WEIGHT	CONTROL	COMMENTS
UNITS					GALLON	°F	°C	GPH	kW	AMPS	VOLTAGE	PHASE	FREQUENCY	HIEGHT x DIA	LBS		
DHWT-1	AO SMITH	DRE-52	MECHANICAL ROOM	DOMESTIC HOT WATER	50	40	140	50 @100°F	12.3	34	208	3	60	55-3/4" x 21-1/2"	265	AQUASTAT	1, 2

NOTE 1: GLASS LINED TANK -MEETS ASHRAE 90.1, INSTALL AS PER MANUFACTURERS REQUIREMENTS, MANUFACTURER SUPPLIED CONTROLS, NON-SIMULTANEOUS OPERATION, TEMPERATURE AND PRESSURE RELIEF VALVE
NOTE 2: POLYURETHANE INSULATION, THERMALLY FUSED UPPER ELEMENT DRY-FIRE PROTECTION, TITANIUM LOWER ELEMENT,

HEAT PUMP SCHEDULE (OUTDOOR)

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	COOLING CAPACITY	HEATING CAPACITY	CONDENSER FAN POWER	SEER	EER	HSPF	ELECTRICAL			MCA	MOCP	DIMENSIONS			WEIGHT	SOUND LEVEL	COMMENTS
UNITS					BTU/h	BTU/h	W				VOLTAGE	PHASE	FREQUENCY	AMPS	AMPS	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	LBS	dB (A)	
HP-1	SAMSUNG	AM060NXMDCR/AA	UNDER DECK	FCU-1 TO FCU-5	60000	66000	2x 139	20.6	11.2	11.5	208	1	60	32	50	37	55-15/16	13	276	59	1, 2, 3,4

NOTE 1: ALL UNITS TO CONTAIN R410-A REFRIGERANT, UNIT TO BE MOUNTED ON 200mm HIGH SLOPED SLEEPERS WITH NEOPRENE PAD ISOLATORS. COORDINATE SLOPING WITH ARCHITECTURAL DETAILS. 24 HOUR - 7 DAY PROGRAMMABLE SYSTEM CONTROLLER
NOTE 2: PERFORMANCE RATING CONDITIONS: COOLING: 26.7°C AND 19.4°C WB INDOOR, 35°C DB OUTDOOR, HEATING: 21.1°C DB INDOOR, -8.3°C DB OUTDOOR
NOTE 3: PROVIDE VIBRATION ISOLATION PAD
NOTE 4: PROVIDE PROTECTION WALL FROM SEA BREEZE. WALL TO BE CONSTRUCTED OF SOLID MATERIAL THAT CAN BLOCK THE SEA BREEZE AND THE HEIGHT AND WIDTH SHALL BE 1.5 TIMES LARGER THAN THE SIZE OF THE OUTDOOR UNIT. MAINTAIN CLEARANCES. REFER TO INSTALLATION MANUAL FOR CLEARANCE REQUIREMENTS.

FAN COIL UNIT SCHEDULE (INDOOR)

DESIGNATION	MANUFACTURER	TYPE	MODEL	LOCATION	SERVING	OUTDOOR UNIT	DESIGN FLOW CFM	TOTAL COOLING CAPACITY	TOTAL HEATING CAPACITY	ELECTRICAL			MCA	MOP	POWER CONSUMPTION	SOUND dB(A)	DIMENSIONS			WEIGHT	COMMENTS
UNITS							H/M/L	BTU/h	BTU/h	VOLTAGE	PHASE	FREQUENCY	AMPS	AMPS	WATTS	HI - MID - LOW	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	LBS	
FCU-1.1	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 104	STUDIO 104	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-1.2	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 104	STUDIO 104	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-2.1	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 103	STUDIO 103	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-2.2	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 103	STUDIO 103	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-3.1	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 102	STUDIO 102	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-3.2	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	STUDIO 102	STUDIO 102	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-4.1	SAMSUNG	DUCTLESS WALL MOUNTED	AM007TNVDCH/AA	ENTRYWAY 101	ENTRYWAY 101	HP-1	201 / 177 / 159	7500	8500	208	1	60	0.2	15	27	34-32-30	11-3/4	32-15/16	8-7/16	20	1, 2, 3, 4
FCU-4.2	SAMSUNG	MINI 4-WAY CASSETTE	AM007NNNDCH/AA	CORRIDOR	CORRIDOR/ENTRY WAY	HP-1	318 / 272 / 230	7500	8700	208	1	60	0.24	15	65	32-29-25	9-13/16	22-5/8	22-5/8	6	1, 2, 3, 4
FCU-5	SAMSUNG	MINI 4-WAY CASSETTE	AM005NNNDCH/AA	KITCHEN	KITCHEN	HP-1	300 / 254 / 230	5000	6000	208	1	60	0.24	15	65	30-28-23	9-13/16	22-5/8	22-5/8	6	1, 2, 3

NOTE 1: ALL TO CONTAIN R410A REFRIGERANT AND BE SUPPLIED WITH VIBRATION ISOLATORS, FILTER RACK AND FILTER,
NOTE 2: PERFORMANCE RATING CONDITIONS: COOLING: 26.7°C AND 19.4°C WB INDOOR, 35°C DB OUTDOOR, HEATING: 21.1°C DB INDOOR, -8.3°C DB OUTDOOR.
NOTE 3: 24 HOUR - 7 DAY WIRED REMOTE CONTROLLER . SAMSUNG MWR-WG00UN.
NOTE 4: PROVIDE SAMSUNG EXTERNAL CONTACT CONTROL MODULE MIM-B14 FOR EACH FAN COIL AND OVERHEAD DOOR CONTACT SENSORS

3/31/2023 8:45 AM

MOTOR LIST

ABBREVIATIONS:
M=Mechanical DIV 15
E=Electrical DIV 16
B.A.S.= Building Automation System
C.C.F.=Firefighters Central Control Facility
EMERG. PWR.=Emergency Power

STARTERS:
VSD=Variable speed drive
MG=Magnetic starter (HOA)
MN=Manual starter
PCS=Packaged Controls

PILOT DEVICES:
F=Float Switch
T=Thermostat
P=Pressure Switch
C=Time Clock
I=Interlock
S=Manual Switch
ET-Electronic Thermostat
FA-Fire Alarm
O=Other
GS= Gas Sensor
B = Building Automation System

SPECIAL INSTRUCTIONS
1.All starters to be magnetic H.O.A. unless otherwise specified
2.A terminal section shall be provided with all MCC's
& wired in accordance with standard detail drawing

UNIT No.	UNIT DESCRIPTION	LOCATION or ROOM NUMBER	V.	PH	CY	LOAD		STARTER TYPE	STARTER SUPPLIED	STARTER INSTALLED	STARTER WIRED	DISCONN SUPPLIED	DISCONN INSTALLED	DISCONN WIRED	PILOT DEVICE TYPE	PILOT DEVICE SUPPLIED	PILOT DEVICE INSTALLED	PILOT DEVICE WIRED	BAS	EMERG PWR	ESSENTIAL	REMARKS
ERV-1	Energy Recovery Ventilator	Ceiling	208	3	60	5.2 MCA	15 MOP	PCS	M	M	E	E	E	E	C	M	E	E	N	N	N	Timeclock
DH-1	ERV-1 Electric Duct Heater	Ceiling	240	1	60	6 kW		PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Controlled by Integral T-Stat
CF-1	De-stratification fan (4 total)	1 per Studio	120	1	60	-	-	PCS	M	M	E	E	E	E	S	M	E	E	N	N	N	Variable Speed Wall Switch
EF-1	Electrical Room Exhaust	Ceiling	120	1	60	FRAC	-	MG	E	E	E	E	E	E	T	E	E	E	N	N	N	Reverse Acting T-Stat
EF-2	Janitor Room Exhaust	Ceiling	120	1	60	FRAC	-	MG	E	E	E	E	E	E	T	E	E	E	N	N	N	
	Electrical Room Intake Damper	Wall	120	1	60																	Interlock to EF-1 c/w End Switch
RH-1	Range Hood	Kitchen	120	1	60	FRAC		PCS	M	M	E	E	E	E								
HP-1	VRF Heat Pump	Outside on Grade	208	1	60	32 MCA	50 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Refer to Manufacturers wiring diagrams
FC-1.1	Hi-Wall VRF Fan Coil	Studio 1	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-1.2	Hi-Wall VRF Fan Coil	Studio 1	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-2.1	Hi-Wall VRF Fan Coil	Studio 2	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-2.2	Hi-Wall VRF Fan Coil	Studio 2	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-3.1	Hi-Wall VRF Fan Coil	Studio 3	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-3.2	Hi-Wall VRF Fan Coil	Studio 3	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-4.1	Hi-Wall VRF Fan Coil	Entrance Lobby	208	1	60	0.20 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-4.2	Mini Cassette VRF Fan Coil	Corridor	208	1	60	0.24 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
FC-5	Mini Cassette VRF Fan Coil	Kitchen	208	1	60	0.24 MCA	15 MOP	PCS	M	M	E	E	E	E	T	M	E	E	N	N	N	Wired T-Stat
MCU-1	Mode Control Unit	Ceiling	208	1	60	2.0 MCA	15 MOP	PCS	M	M	E	E	E	E					N	N	N	
MCU-2	Mode Control Unit	Ceiling	208	1	60	2.0 MCA	15 MOP	PCS	M	M	E	E	E	E					N	N	N	
DHWT-1	Domestic Water Heater	Mechanical Rm	208	3	60	12.3 KW	34 A	PCS	M	M	E	E	E	E								
P-1	Domestic water recirculation	Mechanical Rm	120	1	60	FRAC																
EFF *	Electric Force Flow	Entry	120	1	60	2 @ 1.5 kW						E	E	E	T	E	E	E	N	N	N	Controlled by FC-4.1/4.2 T-Stat Aux Heat Module. Provide Relay
BB *	Elecric Baseboard	Corridor	120	1	60	0.5 kW						E	E	E	T	E	E	E	N	N	N	Controlled by wall mounted T-Stat
BB *	Electric Baseboard	Mech Room	120	1	60	0.5 kw						E	E	E	T	E	E	E	N	N	N	Controlled by wall mounted T-Stat
BB *	Baseboard Heater	Male WC	120	1	60	0.5 kw						E	E	E	T	E	E	E	N	N	N	Controlled by wall mounted T-Stat
BB *	Baseboard Heater	Female WC	120	1	60	0.5 kw						E	E	E	T	E	E	E	N	N	N	Controlled by wall mounted T-Stat

Additional Instructions:
* Equipment supplied by Div. 16.

SEQUENCE OF OPERATIONS

Domestic Hot Water System:
Tanks to maintain water temperature at 140°F
P-1 to operate based on signal from timeclock (5am-10pm) and aquastat.

Mechanical / electrical Room Ventilation:
EF-1 to operate based on signal from reverse acting T-Stat.
Motorized damper on intake louver to open and prove open via end switch prior to EF-1 starting upon signal from reverse acting T-Stat.
Room set-point to be 80°F but adjustable at wall mounted T-Stat.

Janitors Room Exhaust:
EF-2 to operate based on time-clock schedule

ERV-1
Operate based on signal from time-clock. Coordinate operation schedule with building operator.
Duct heater to maintain discharge air temp setpoint of 68F

Baseboard / Force Flows:
Set t-stat for common area and bedroom baseboards to 70°F (adjustable)

VRF:
VRF system to be started up and commissioned per Samsung installation requirements. set up all HR Changer / MCU and pipe addresses per Samsung instruction. Provide complete commissioning and start-up checklists for all VRF equipment.
The heating mode range of the VRF heat pumps is -13°F to 73°F outdoor ambient temp, VRF system to utilize heating mode range down to -13°F. The living room baseboard heaters supplement with heat as required if setpoint cannot be met. This is managed through the MIM-B14 external contact control module installed inside the FCUs, which interlocks the living room baseboard heater with the VRF system.
The cooling mode will be set to 75°C for common areas and suites set to 73°F as per BC Housing Guidelines.

PLUMBING FIXTURES

Tag/Mark/Label	Description
WC-1	**TOILET - WALL-HUNG DXV D23010S000.415 D28015000.150 Toilet -** COSSU™, Tank type Toilet, Wall-hung with wall outlet, 3.0 LPF (0.8 GPF) partial flush and 6.0 LPF (1.6 GPF) full flush, Canvas white finish Vitreous china, Elongated bowl, Siphon jet flush action, Manual, Platinum nickel Skate Cosmopolitan dual flush actuator (D28015000.150), Tank not lined, Without tank cover locking device, Gravity-assisted flush, Tank coupling components, Mounting hardware included, Includes color-matched 5020A15G TRADITIONAL elongated toilet seat with cover, polypropylene, slow-close top-mounting easy lift-off hardware, 368 mm (14-1/2") wide, 533 mm (21") from finished wall, 349 mm (13-3/4") high Compliances: ASME A112.6 compliant, CSA B125.3 compliant, EPA WaterSense® compliant. GROHE 38996000 Carrier - Single
LAV-1	**American Standard 0955001EC.020 0097000.020 Basin** - MURRO, Wall-hung Lavatory, Vitreous china, EverClean® antimicrobial surface, White finish, Single hole centerset, Rear overflow, Faucet ledge with recessed self-draining deck, For concealed arm or wall support, Acrylic shroud, conceals control box and thermostatic mixing valve (0097000), Soap dispenser, When installed with a below deck electronics faucet which has the control box, the accessories will not fit under the shroud and will need to be installed outside the shroud, Overall Dimensions: 545 mm (21-7/16") long, 540 mm (21-1/4") wide, 152 mm (6") high, Bowl Dimensions: 394 mm (15-1/2") long, 540 mm (21-1/4") wide, 127 mm (5") deep Sloan SL-EFX200.100.0040 Faucet - BASYS®, Counter mounted, Automatic no-touch, Hardwired, Lavatory faucet, Polished chrome finish, Single hole centerset, Metal spout, Flexible high pressure supply hoses with 10 mm (3/8") compression connections, 1.9 LPM (0.5 GPM) maximum flowrate, Multi-laminar spray outlet, Fixed spout, 147 mm (5-7/8") spout reach, 164 mm (6-7/16") high, Infrared sensor, Above deck control access, Below deck mechanical mixing valve, Less drain, Sloan transformer recommended, Vandal-resistant spray insert, key housed inside faucet body. Sloan SL-EFX200.100.0040 Faucet - BASYS®, Counter mounted, Automatic no-touch, Hardwired, Lavatory faucet, Polished chrome finish, Single hole centerset, Metal spout, Flexible high pressure supply hoses with 10 mm (3/8") compression connections, 1.9 LPM (0.5 GPM) maximum flowrate, Multi-laminar spray outlet, Fixed spout, 147 mm (5-7/8") spout reach, 164 mm (6-7/16") high, Infrared sensor, Above deck control access, Below deck mechanical mixing valve, Less drain, Sloan transformer recommended, Vandal-resistant spray insert, key housed inside faucet body. Sloan ETF-233 Faucet and Flush Valve Power Kit - For faucet American Standard 7723.018.002 Fixture Drain - Grid drain, For wheelchair lavatory, Brass construction, Polished chrome finish, 267 mm (10-1/2") high, 4-3/4" to 5" offset, With overflow, 32 mm (1-1/4") tailpiece, ASME A112.18.2, CSA B 125.2 McGuire LFBV2165 Supply - Lead free, Convertible quarter-turn supply , Chrome-plated finish, Two 13 mm (1/2") I.P.S. x 10 mm (3/8") Ø brass ball valve, 304 mm (12") copper flexible risers, Convertible loose key handle, Lavatory, Two steel shallow flanges McGuire 8090C P-Trap - Heavy cast brass, Adjustable p-trap, Ground joint cast brass elbow, With cleanout plug, Cast brass slip nuts, 52 mm (2") minimum water seal, ASME A112.18.2 CSA B125.2, CSA compliant McGuire 8090C P-Trap - Heavy cast brass, Adjustable p-trap, Ground joint cast brass elbow, With cleanout plug, Cast brass slip nuts, 52 mm (2") minimum water seal, ASME A112.18.2 CSA B125.2, CSA compliant Watts TCA-411 Carrier - Floor mounted concealed Arm Track lavatory Carrier, Carrier complies with requirements of ASME A112.6.1M up to a 113 kg (250 lbs) static load, required minimum space is 87 mm (3-13/32")
SK-1	**FLOOR MOUNTED, SCULLERY SINK-Franke Commercial SSL2424L-1-2 Sink** - Single compartment sink, 203 mm (8") centerset, Scullery sink, with overall dimension 1273 mm (50-1/8") long, 724 mm (28-1/2") wide, 1118 mm (44") high, constructed from Grade 18-10 14 gauge Type 304 Stainless steel, Bowl dimensions are 610 mm (24") long, 610 mm (24") wide, 356 mm (14") deep, Finished with rolled rim, Polished to #4 satin finish, With backsplash, Fully welded square corner construction, Drainboard is located to the left of sink bowl, Less overflow, Stainless steel tubular legs with adjustable feet for leveling, Center waste location, 38 mm (1-1/2") (DN38) brass tailpiece, 89 mm (3-1/2") crumb cup strainer, waste fitting included, Codes and Compliances: ASME A112.19.3 compliant, CSA B45.4 compliant. Chicago Faucets 631-ABCP Faucet - Wall-hung, Manual, Two handles, Sink faucet, Polished chrome finish, 203 mm (8") centerset, Lead Free ANSI/NSF 61 and ANSI/NSF 372 compliant, ECAST® brass construction, Less supply, 10 mm (3/8") offset inlet supply arms, Quaturn™ compression cartridge (90° turn), 8.3 LPM (2.2 GPM) maximum flowrate, Pressure compensating Softflo™ aerator, Gooseneck spout, 89 mm (3-1/2") spout reach, 222 mm (8-3/4") high, Vandal-resistant 102 mm (4") wrist blade handles with indexed buttons, Less drain, 13 mm (1/2") NPT female thread inlet. McGuire 202C P-Trap - Solid heavy duty cast brass, Chrome-plated finish, With cleanout plug, Cast brass slip nuts, 52 mm (2") minimum water seal Watts TCA-411 Carrier - Floor mounted concealed Arm Track lavatory Carrier, Carrier complies with requirements of ASME A112.6.1M up to a 113 kg (250 lbs) static load, required minimum space is 87 mm (3-13/32")
SK-2	**COUNTER MOUNTED, DROP-IN, COMMERCIAL SINKS**-Franke Commercial LBD7508-1-3 Sink - Double compartment sink, 203 mm (8") centerset, Commercial sinks, with overall dimension 845 mm (33-1/4") long, 559 mm (22") wide, 203 mm (8") high, constructed from 20 gauge Type 302 Stainless steel, Left bowl is 381 mm (15") long and right bowl is 381 mm (15") long, Left bowl is 432 mm (17") wide and right bowl is 432 mm (17") wide, Left bowl is 203 mm (8") deep and right bowl is 203 mm (8") deep, Polished to #4 satin finish, Factory installed EZ TORQUE™ fasteners, Factory applied rim seal, Center back waste location, 38 mm (1-1/2") (DN38) brass tailpiece, standpipe with guard, 89 mm (3-1/2") crumb cup strainer, Undercoated to reduce condensation and resonance, Codes and Compliances: ASME A112.19.3 compliant, CSA B45.4 compliant. Chicago Faucets 201-AGN8AFC317ABCP Faucet - Counter mounted, Manual, Two handles, Sink faucet, Polished chrome finish, 203 mm (8") centerset, Lead Free ANSI/NSF 61 compliant, ECAST® brass construction, Less supply, 1/4 turn compression cartridge, 5.7 LPM (1.5 GPM) maximum flowrate, Male thread with laminar flow control insert in spout inlet, Gooseneck spout, 203 mm (8") spout reach, 333 mm (13-1/8") high, 102 mm (4") wrist blade handle with indexed buttons, Less drain, 13 mm (1/2") NPSM supply inlet for 10 mm (3/8") or 13 mm (1/2") flexible riser. McGuire LFCK165LK Supply - Lead free, Pipe to compression, Integral check supply kit, Chrome-plated finish, 3/8" I.P.S x 3/8" O.D, 305 mm (12") chrome-plated risers, Loose key, Faucet, Shallow wall flange McGuire 202C P-Trap - Solid heavy duty cast brass, Chrome-plated finish, With cleanout plug, Cast brass slip nuts, 52 mm (2") minimum water seal
JAN-1	**FLOOR MOUNTED, MOP SERVICE SINKS-Stern Williams SB-900-T-10-VB-T-35-T-40-BP Sink** - Single compartment sink, Mop service sinks, with overall dimension 610 mm (24") long, 610 mm (24") wide, 305 mm (12") high, constructed from Precast terrazzo, Bowl dimensions are 546 mm (21-1/2") long, 546 mm (21-1/2") wide, 254 mm (10") deep, Pearl grey marble chips and white portland cement, 76 mm (3") pipe size, cast integrally and provides for a caulked lead connection not less than 25 mm (1") deep to a 76 mm (3") pipe, flat stainless steel strainer, Without tiling flange, With stainless steel cap, Chrome finish mop service sink fitting with vacuum breaker, Hose and wall hook, Mop hanger, Splash catcher. American Standard 7293172H.002 Faucet - HERITAGE, Wall-hung, Manual, Two handles, Mop sink faucet, Polished chrome finish, 203 mm (8") centerset, Lead Free ANSI/NSF 61 compliant, Brass construction, Less supply, Ceramic disc cartridge, 5.7 LPM (1.5 GPM) maximum flowrate, Pressure compensating aerator, Brass gooseneck spout, 216 mm (8-1/2") spout reach, 265 mm (10-7/16") high, Wrist blade handle, Less drain, 13 mm (1/2") female inlet.
HB-1	**MODERATE CLIMATE WALL HYDRANT WITH CHROME PLATED FACE, INTEGRAL VACUUM BREAKER Watts HY-430 Hydrant** - Moderate Climate wall Hydrant with chrome-plated face, integral vacuum breaker, all bronze, chrome-plated face, seat casting, loose key, 19 mm (3/4") hose connection, integral vacuum breaker, 19 mm (3/4") female x 25 mm (1") male pipe connection, Complies with ASSE 1019-2004, UPC/IAMPO listed. Max. operating pressure 125 psi.
SI-1	**HAIR, PLASTER & SEDIMENT INTERCEPTOR W/FLUSH COVER - Watts SI-742-X-SS Interceptors** - Epoxy coated steel, Hair, Plaster & Sediment Interceptor, Hair, Plaster & Sediment Interceptor w/Flush Cover, 51 mm (2") I.P.S. threaded connections, removable stainless steel sediment basket, Gasketed cover, Stainless steel top.
FD-1	**FLOOR DRAIN WITH ROUND STAINLESS STEEL STRAINER** - Watts FD-1103NH-A5-7 Floor Drain - Floor drain, Trap primer tapping, Round stainless steel strainer, Epoxy coated cast iron, No hub (MJ) outlet, 76 mm (3") pipe size, 127 mm (5") Diameter, stainless steel strainer, load rating: HD, Adjustable round heel proof stainless steel strainer, With anchor flange, Reversible clamping collar with primary & secondary weepholes, The load classifications are in accordance with the American National Standards ASME A112.21.1M
FFD-1	**FLOOR DRAIN WITH OVAL FUNNEL** - Watts FD-103NH-EG-7-1 Floor Drain - Floor drain, Trap primer tapping, Oval Funnel, Epoxy coated cast iron, No hub (MJ) outlet, 76 mm (3") pipe size, 102 mm (4") x 229 mm (9") oval nickel bronze funnel, With anchor flange, Reversible clamping collar with primary & secondary weepholes
RD-1	**MENZIES COMMERCIAL SPUN COPPER INSERT DRAIN**- Specification: Menzies Commercial Spun Copper Insert Drain. Install as per manufacturer's written instructions (located on website). Manufactured by Menzies Metal Products (www.menzies-metal.com, 1-800-665-8840). Two-piece membrane clamping system and cast aluminum high-rise strainer. Sizes to fit 2" (1 3/4" OD), 3" (2 3/4"OD), 4" (3 3/4" OD), and 6" (5 3/4"OD). 18" flange. 4" of adhesion surface. Use with (optional) Menzies Blue Drain Seal™ for outlet seal.

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NANAIMO OFFICE ph. 250.585.0222
102 - 3721 SHENTON ROAD
NANAIMO, BC, V9T 2H1

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	MAR. 31, 2023	ISSUED FOR BP & TENDER	KS
3	FEB. 17, 2023	ISSUED FOR 95% CD'S	KS
2	FEB. 02,2023	ISSUED FOR 75% CD'S	KS
1	NOV. 21, 2022	ISSUED FOR COORDINATION	KS

REVISIONS:

SEAL:

Association of Professional Engineers and Geoscientists of the Province of British Columbia
A. J. MULLALEY
PROFESSIONAL LICENSEE ENGINEERING
Licence 170480
2023-03-31

Permit to Practice #1000700

CLIENT:

PROJECT:
LADYSMITH ARTS AND HERITAGE HUB

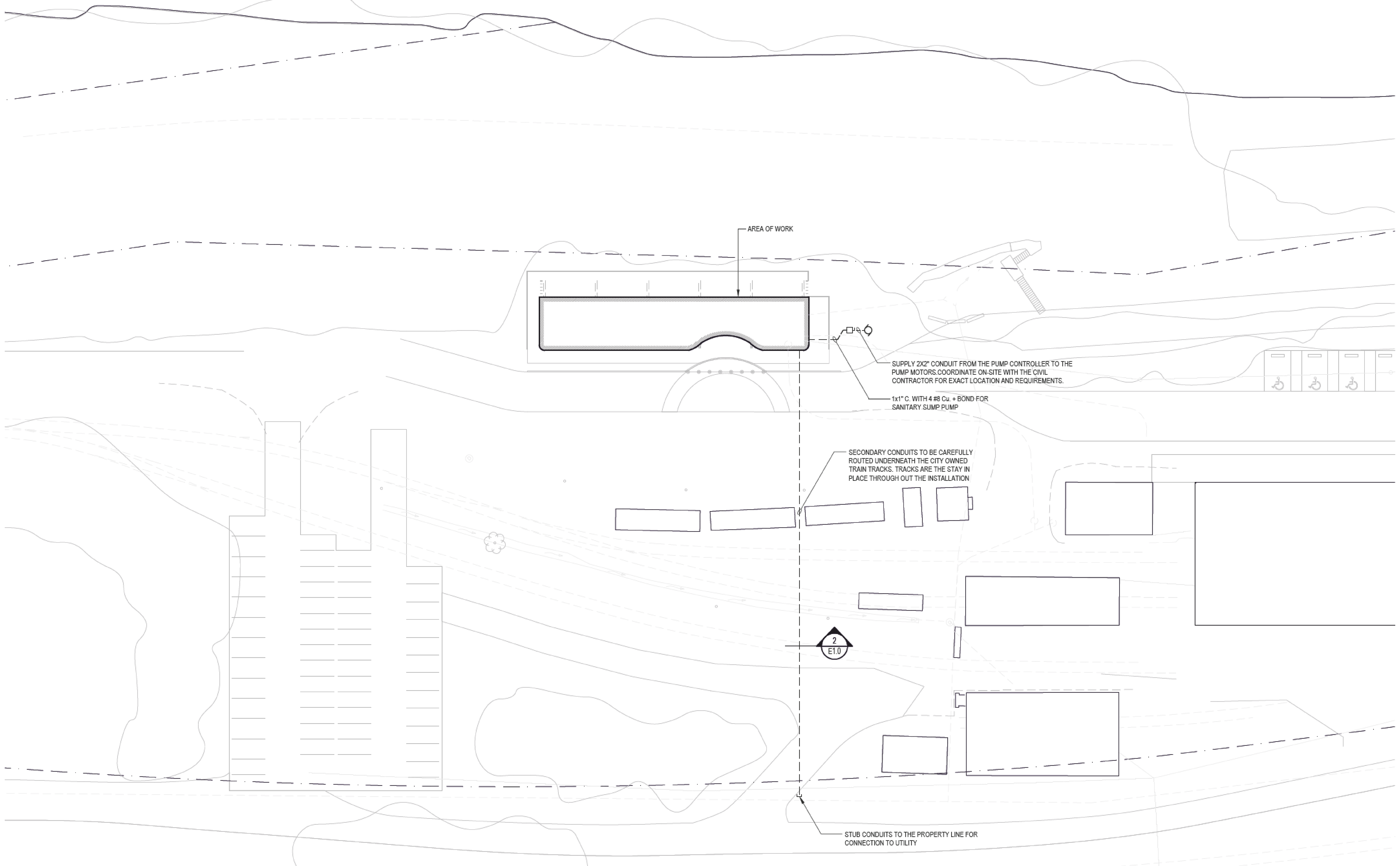
610, 612, 614 AND 616 OYSTER BAY ROAD
LADYSMITH, BC V9G 1B8

DRAWING NAME:
MECHANICAL SCHEDULES

PROJECT NUMBER:
20635-N

DRAWN BY: KS
DESIGNED BY: SC
APPROVED BY: AM
SCALE: AS INDICATED

DRAWING:
M-5



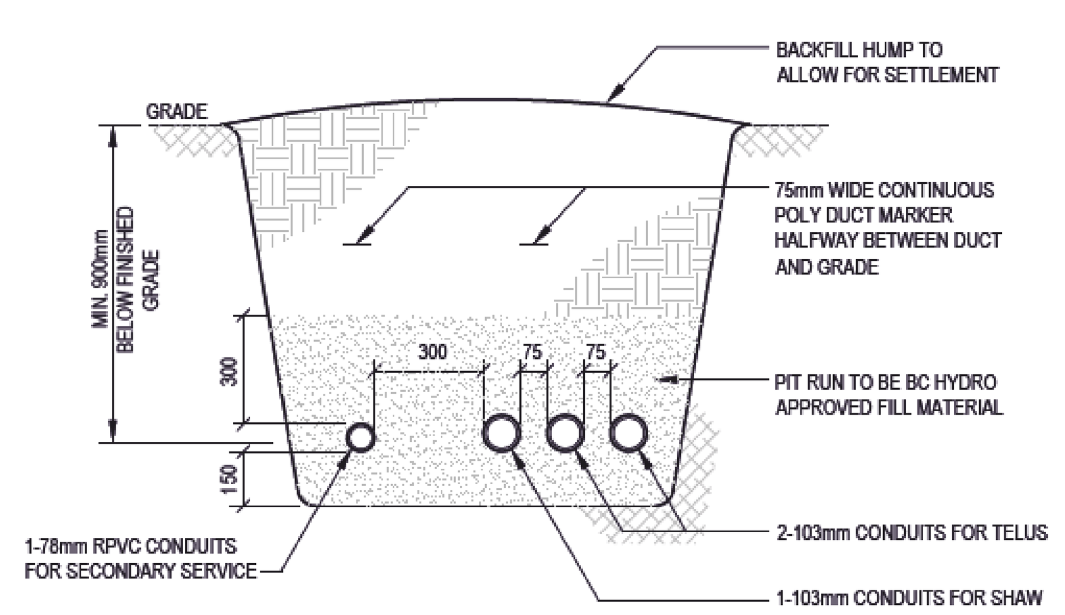
1 E1.0 SITE PLAN ELECTRICAL LAYOUT 1"=30'-0"

ELECTRICAL SYMBOL LEGEND

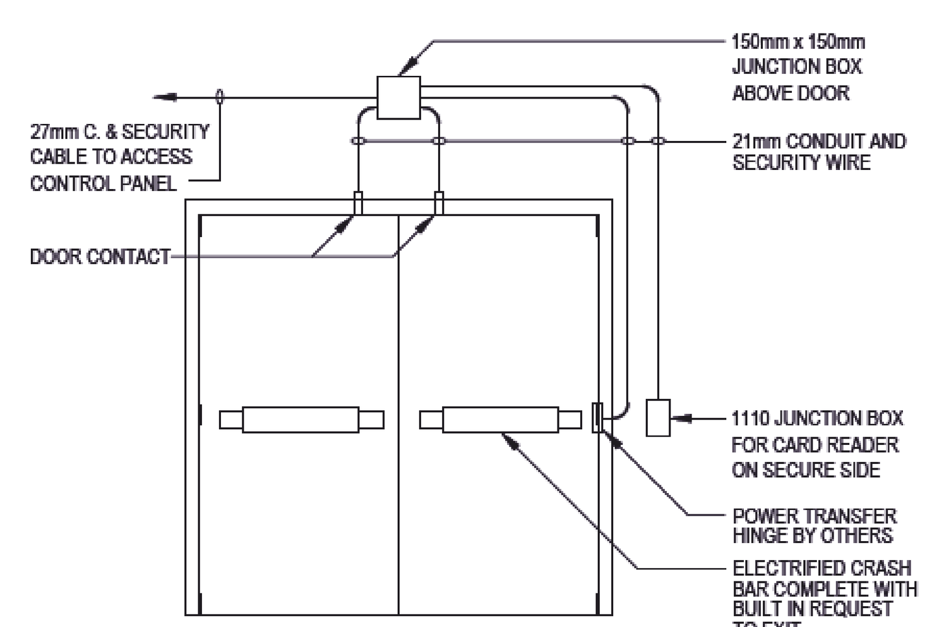
ABBREVIATIONS	
WP	DENOTES WEATHER PROOF DEVICE
	DENOTES DOOR TAG NUMBER
LIGHTING	
	SURFACE MOUNTED LUMINAIRE
	CEILING RECESSED LUMINAIRE
	STRIP LIGHT
	FLEXIBLE LUMINAIRE
	RECESSED DOWN LIGHT
	WALL MOUNTED LUMINAIRE
	TRACK
	TRACK HEAD
	BOLLARD LUMINAIRE
	SINGLE POLE TOGGLE SWITCH, GANGED AS SHOWN
	DIMMER SWITCH
	OCCUPANCY SENSOR, CEILING MOUNTED
	LOW VOLTAGE OCCUPANCY SENSOR, CEILING MOUNTED
	EXIT SIGN - DIRECTION AS INDICATED ON PLANS
	DUAL HEAD EMERGENCY LIGHTING COMPLETE WITH SELF-CONTAINED BATTERY PACK, WALL MOUNTED
SECURITY	
	PERIMETER DOOR ALARM CONTACT
	CCTV CAMERA
	CARD READER
	ELECTRIC DOOR STRIKE
	KEY PAD
	REQUEST TO EXIT SENSOR
	180° INTRUSION MOTION DETECTOR
	360° INTRUSION MOTION DETECTOR
	INTRUSION ALARM CONTROL PANEL
	ELECTRIC DOOR CONTACT
	ACCESS CONTROL SYSTEM

POWER	
	DUPLEX RECEPTACLE
	ABOVE COUNTER DUPLEX RECEPTACLE
	5-20R DUPLEX RECEPTACLE (T-SLOT)
	FOUR PLEX RECEPTACLE
	ABOVE COUNTER FOUR PLEX RECEPTACLE
	5-20R DUPLEX RECEPTACLE (T-SLOT) GROUND FAULT CIRCUIT INTERRUPTER (GFCI)
	ABOVE COUNTER 5-20R DUPLEX RECEPTACLE (T-SLOT) GROUND FAULT CIRCUIT INTERRUPTER (GFCI)
	ABOVE COUNTER GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE (GFCI)
	ABOVE COUNTER 5-20R DUPLEX RECEPTACLE (T-SLOT) WITH 2 USB PORTS
MW/RH	MICROWAVE/RANGEHOOD RECEPTACLE (T-SLOT)
F	FRIDGE RECEPTACLE
R	RANGE RECEPTACLE
	THERMOSTAT
	BASEBOARD HEATER, WATTAGE AS NOTED ON PLANS
	FORCE FLOW HEATER
	PANEL BOARD
	GROUND BUS
	CEILING FAN CONNECTION
	MECHANICAL MOTOR CONNECTION
	DISCONNECT SWITCH
	MECHANICAL EQUIPMENT CONNECTION
	AUTOMATIC DOOR OPERATOR
COMMUNICATIONS	
	WIRELESS ACCESS POINT
	COMBINATION CATV/DATA OUTLET
	COMBINATION DATA/TEL OUTLET (1D/1T) NUMBER OF DATA AND TEL PORTS AS INDICATED ON PLANS
	ABOVE COUNTER COMBINATION DATA/TEL OUTLET (1D/1T) NUMBER OF DATA AND TEL PORTS AS INDICATED ON PLANS

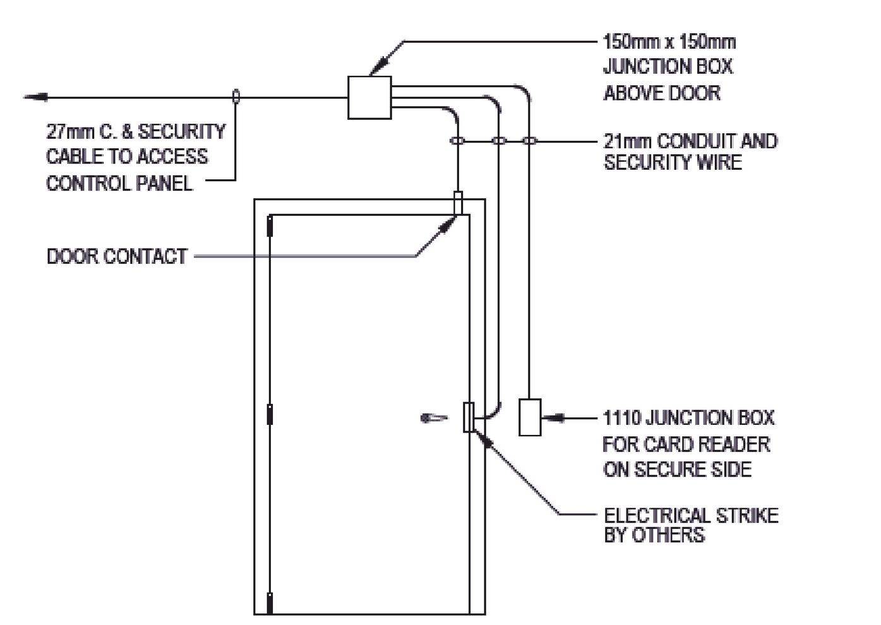
LAHH					AUTHOR	Bryan Kilback
ELECTRICAL LOAD CALCULATION					LAST ACCESSED	2023-03-31
\\aeswicdc01\projects\Projects\2021\1-21-081\dwgs\dwg\[1-21-0081 - 2022.11.16 - LAHH - CEC21-8-21					LAST SAVED	2022-09-15
BASIC LOAD						
INDUSTRIAL AND COMMERCIAL	280 m^2	x	25 W/m^2		=	7000 W
TOTAL BASIC LOAD					=	**7000 W**
EQUIPMENT						
SPECIALTY LIGHTING						2000 W
MECHANICAL EQUIPMENT					=	31207 W
KITCHEN EQUIPMENT					=	5000 W
TOTAL EQUIPMENT LOAD						**38207 W**
TOTAL LOAD						**45207 W**
SERVICE MINIMUM AMPACITY	45207 W	@	208 V	3 PH	=	125 A
MIN OVERCURRENT PROTECTION	125 A	@	125%		=	157 A
SERVICE MAINSWITCH						**200 A**
SUPPLY ARRANGEMENT						UNDERGROUND



2 E1.0 TRENCH DETAIL NOT TO SCALE



3 E3.01 SECURITY DOOR DETAIL D1 NOT TO SCALE



4 E3.01 SECURITY DOOR DETAIL D2 NOT TO SCALE

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P. C. BJORNERT # 45113 PROFESSIONAL ENGINEER BRITISH COLUMBIA
2023-03-31

Arts and Heritage Hub

Ladysmith, BC

Client	Designed/Drawn By	Reviewed By	Sheet Number
Town of Ladysmith	BAK/TS	PB	E1.0

Project Number	Sheet Name		
0121.0081	SITE PLAN AND LEGEND		

Scale	Date	Issue No.	Issued For	Revision
AS NOTED	03/31/23	1	BUILDING PERMIT	2
	03/31/23	2	TENDER	

MECHANICAL EQUIPMENT SCHEDULE

TAG	DESCRIPTION	EQUIPMENT LOCATION	LOAD MCA	LOAD kW	LOAD HP	LOAD VOLTS	LOAD PHASE	LOAD TYPE	LOAD FLA	UNIT SUPPLY	UNIT MOUNT	UNIT CONNECT	STARTER SUPPLY	STARTER MOUNT	STARTER CONNECT	STARTER TYPE
ERV-1	Energy Recovery Ventilator	Ceiling	5.20			208	3		4.16	M	M	E	M	M	E	PCS
										M						
DH-1	ERV-1 Electric Duct Heater	Ceiling		6.00		208	3	RESISTIVE	16.65	M	M	E	M	M	E	PCS
CF-1	De-stratification fan	1 per Studio			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	PCS
CF-2	De-stratification fan	1 per Studio			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	PCS
CF-3	De-stratification fan	1 per Studio			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	PCS
CF-4	De-stratification fan	1 per Studio			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	PCS
EF-1	Electrical Room Exhaust	Ceiling			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	HOA
EF-2	Janitor Room Exhaust	Ceiling			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	HOA
RH-1	Range Hood	Kitchen			FR	120	1	INDUCTIVE	4.40	M	M	E	M	M	E	PCS
HP-1	VRF Heat Pump	Outside on Grade	32.00			208	1	INDUCTIVE	25.60	M	M	E	M	M	E	PCS
FC-1.1	Hi-Wall VRF Fan Coil	Studio 1	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-1.2	Hi-Wall VRF Fan Coil	Studio 1	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-2.1	Hi-Wall VRF Fan Coil	Studio 2	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-2.2	Hi-Wall VRF Fan Coil	Studio 2	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-3.1	Hi-Wall VRF Fan Coil	Studio 3	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-3.2	Hi-Wall VRF Fan Coil	Studio 3	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-4.1	Hi-Wall VRF Fan Coil	Entrance Lobby	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-4.2	Hi-Wall VRF Fan Coil	Corridor	0.20			208	1	INDUCTIVE	0.16	M	M	E	M	M	E	PCS
FC-5	Mini Cassette VRF Fan Coil	Kitchen	0.24			208	1	INDUCTIVE	0.19	M	M	E	M	M	E	PCS
MCU-1	Mode Control Unit	Ceiling	2.00			208	1	INDUCTIVE	1.60	M	M	E	M	M	E	PCS
MCU-2	Mode Control Unit	Ceiling	2.00			208	1	INDUCTIVE	1.60	M	M	E	M	M	E	PCS
DHWT-1	Domestic Water Heater	Mechanical Rm		12.30		208	3	RESISTIVE	34.14	M	M	E	M	M	E	PCS
EFF 1	Electric Force Flow	Entry		1.00		120	1	RESISTIVE	8.33	E	E	E				
EFF 2	Electric Force Flow	Entry		1.00		120	1	RESISTIVE	8.33	E	E	E				
BB *	Elecric Baseboard	Corridor		0.50		120	1	RESISTIVE	4.17	E	E	E				
BB *	Electric Baseboard	Mech Room		0.50		120	1	RESISTIVE	4.17	E	E	E				
BB *	Baseboard Heater	Male WC		0.50		120	1	RESISTIVE	4.17	E	E	E				
BB *	Baseboard Heater	Female WC		0.50		120	1	RESISTIVE	4.17	E	E	E				
		SANITARY PUMP			0.50	208	3	INDUCTIVE	6.40			E				

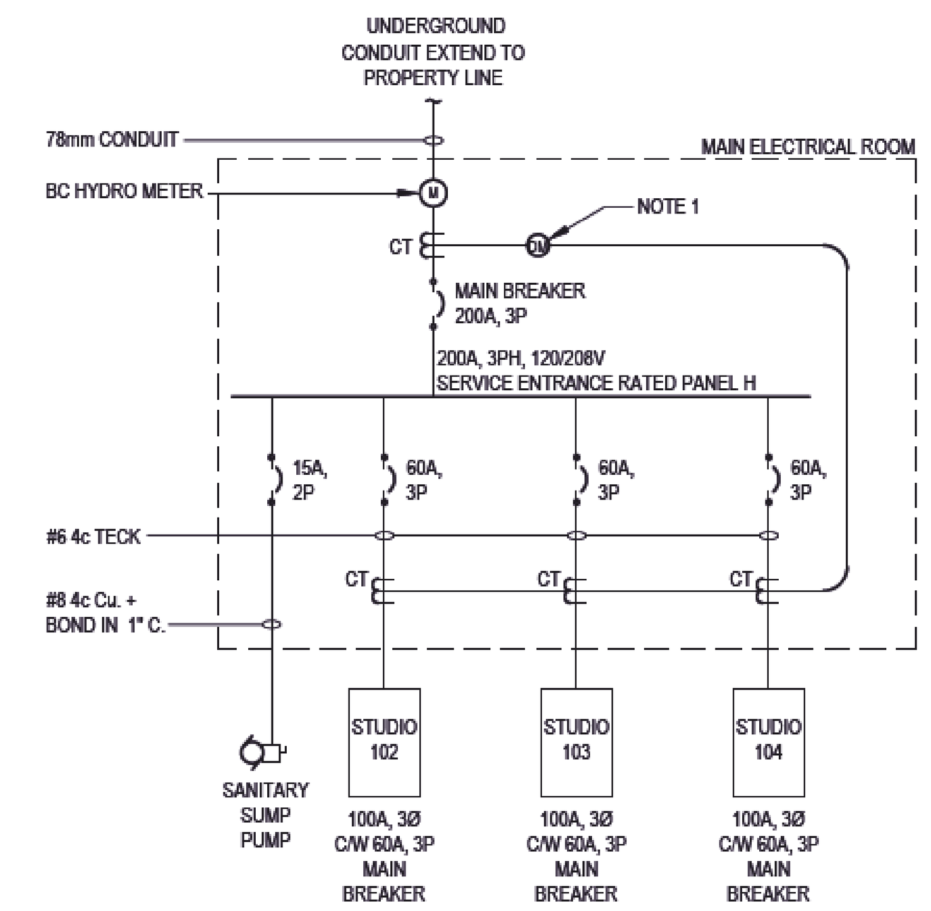
TAG	DISC. SUPPLY	DISC. MOUNT	DISC. CONNECT	CONTROL SUPPLY	CONTROL MOUNT	CONTROL CONNECT	CONTROL TYPE	FIRE ALARM	PANEL #	PANEL LOCATION	BREAKER AMPS	BREAKER POLE	CCT #'S	WIRE SIZE	NUMBER	CONDUIT SIZE	EMR PWR	STANDBY PWR	NOTE(S)
ERV-1	E	E	E	M	M	E	TC		M	ELECTRICAL ROOM	20	3	H-51,53,55	12	4	27			
DH-1	E	E	E	M	M	E	T		M	ELECTRICAL ROOM	20	3	H-50,52,54	12	4	27			
CF-1	E	E	E	M	M	E	SW		S	STUDIO	15	1	S-6	12	2	27			
CF-2	E	E	E	M	M	E	SW		S	STUDIO	15	1	S-6	12	2	27			
CF-3	E	E	E	M	M	E	SW		S	STUDIO	15	1	S-6	12	2	27			
CF-4	E	E	E	M	M	E	SW		H	ELECTRICAL ROOM	15	1	H-35	12	2	27			
EF-1	E	E	E	M	M	E	SW		H	ELECTRICAL ROOM	15	1	H-49	12	2	27			
EF-2	E	E	E	M	M	E	SW		H	ELECTRICAL ROOM	15	1	H-49	12	2	27			
RH-1	E	E	E	M	M	E			H	ELECTRICAL ROOM	15	1	H-19	12	2	27			
HP-1	E	E	E	M	M	E			H	ELECTRICAL ROOM	40	2	H-45,47	8	3	27			
FC-1.1	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,10	12	3	27			
FC-1.2	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,11	12	3	27			
FC-2.1	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,12	12	3	27			
FC-2.2	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,13	12	3	27			
FC-3.1	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,14	12	3	27			
FC-3.2	E	E	E	M	M	E	T		S	STUDIO	15	2	S-8,15	12	3	27			
FC-4.1	E	E	E	M	M	E	T		H	ELECTRICAL ROOM	15	2	H-37,39	12	3	27			
FC-4.2	E	E	E	M	M	E	T		H	ELECTRICAL ROOM	15	2	H-41,43	12	3	27			
FC-5	E	E	E	M	M	E	T		H	ELECTRICAL ROOM	15	2	H-56,58	12	3	27			
MCU-1	E	E	E	M	M	E			H	ELECTRICAL ROOM	15	2	H-36,38	12	3	27			
MCU-2	E	E	E	M	M	E			H	ELECTRICAL ROOM	15	2	H-40,42	12	3	27			
DHWT-1	E	E	E	M	M	E			H	ELECTRICAL ROOM	50	3	H-44,46,48	8	4	27			
EFF 1	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	30	1	REFER TO PANEL H	10	2	27			
EFF 2	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	30	1	REFER TO PANEL H	10	2	27			
BB *	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	15	1	REFER TO PANEL H	12	2	27			
BB *	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	15	1	REFER TO PANEL H	12	2	27			
BB *	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	15	1	REFER TO PANEL H	12	2	27			
BB *	E	E	E	E	E	E	T		M	ELECTRICAL ROOM	15	1	REFER TO PANEL H	12	2	27			
(SANITARY PUMP)	E	E	E						H	ELECTRICAL ROOM	15	3	H-61,63,65	12	4	27			

LEGEND

- M = DENOTES BY MECHANICAL CONTRACTOR
- E = DENOTES BY ELECTRICAL CONTRACTOR
- T = THERMOSTAT
- TC = TIME CLOCK
- PCS = PACKAGED CONTROL SYSTEM
- MAG = MAGNETIC STARTER WITH AUX STATUS CONTACTS
- MAN = MANUAL STARTER
- CP = CONTROL PANEL
- INT = INTEGRAL WITH UNIT
- I = INTERLOCK
- OA = MAGNETIC STARTER WITH OFF-AUTO SELECTOR
- BMS = BUILDING MANAGEMENT SYSTEM
- WT = WIRE TO
- VFD = VARIABLE FREQUENCY DRIVE
- RT = REVERSE ACTING THERMOSTAT
- SW = HP RATED SWITCH
- DDC = CONTROLLED BY DDC SYSTEM
- HOA = HAND OFF AUTO

NOTES

1 ALL VARIABLE SPEED DRIVES TO HAVE A DEDICATED COPPER BOND CONDUCTOR SIZED TO MATCH PHASE CONDUCTOR.
2 ALL WIRE SIZES ARE IN COPPER (UNLESS EXPLICITALLY STATED OTHERWISE) AND ARE TO BE PROVIDED WITH A BOND CONDUCTOR.
3 CONFIRM FINAL MECHANICAL EQUIPMENT REQUIREMENTS WITH MECHANICAL CONTRACTOR'S SHOP DRAWINGS AND ADJUST CIRCUIT WIRING AND BREAKER RATING IF REQUIRED AT NO ADDITIONAL COST.
4 ALL WIRING AND RACEWAYS ARE SIZED BASED ON THE MINIMUM PROVISIONS OF THE CEC. THE CONTRACTOR IS TO ADJUST WIRE AND RACEWAY SIZES BASED ON FIELD CONDITIONS AND VOLTAGE DROP, AT NO ADDITIONAL COST TO THE OWNER.
5 ALL WIRE NUMBERS INCLUDE A DEDICATED NEUTRAL. CONFIRM FINAL EQUPMENT WIRING REQUIREMENTS WITH MECHANICAL PRIOR TO INSTALLATION.



NOTES:
1. SUPPLY AND INSTALL REVENUE GRADE METERING ON ALL STUDIO FEEDER FOR CLIENT BILLING STANDARD OF ACCEPTANCE. TRIACTA 6000 SERIES. PROVIDE POWER (208V, 2P) AND DATA CONNECTION.

1 / E1.1 SINGLE LINE DIAGRAM — NOT TO SCALE

LIGHTING COMPLIANCE DOCUMENTATION

CODE	YES	NO	N/A
ASHRAE 90.1-2016	X		
NECB-2015		X	
COMPLIANCE PATH			
PRESCRIPTIVE	X		
SPACE BY SPACE	X		
BUILDING AREA			X
PERFORMANCE			X
INDEPENDENT PROVISIONS CHECKLIST			
LIGHTING CONTROLS	X		
AUTOMATIC LIGHTING SHUTOFF CONTROLS ARE PROVIDED BASED ON EITHER A SCHEDULING DEVICE OR AN OCCUPANT SENSOR	X		
EACH ENCLOSED SPACE HAS ITS OWN CONTROL INCLUDING BI-LEVEL OR OCCUPANCY BASED WHERE REQUIRED.	X		
CONTROLS FOR PARKING GARAGES, INCLUDING BI-LEVEL, TRANSITION AND PERIMETER CONTROL AS REQUIRED.			X
AUTOMATIC DAYLIGHTING CONTROLS FOR PRIMARY SIDELIGHTED AREAS			X
AUTOMATIC DAYLIGHTING CONTROLS FOR TOPLIGHTING.			X
ADDITIONAL CONTROLS FOR DISPLAY/ACCENT, CASE, GUEST ROOM, TASK, NONVISUAL AND DEMONSTRATION LIGHTING APPLICATIONS.			X
EXTERIOR LIGHTING CONTROLS INCLUDING AUTOMATIC SHUTOFF AND BI-LEVEL AS REQUIRED.	X		
EXIT SIGNS DO NOT EXCEED 5W PER FACE	X		
INTERIOR LIGHTING POWER BELOW ALLOWABLE LPD	X		
EXTERIOR LIGHTING POWER BELOW ALLOWABLE LPD	X		
FUNCTIONAL TESTING TO BE PREFORMED BY FACTORY CERTIFIED TECHNICIAN	X		

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	CAT. No.	LAMPS	BALLAST	REMARKS
A	LEDALITE TRUGROOVE	TM-1-1-L-935-930-	3500K, 90CRI, 4000lm/4FT	0-10V	SURFACE MOUNT LINIER FIXTURE REFER TO THE DRAWINGS FOR LENGTHS
B	SISTEMALUX STUDIO MINI	1760-S1-HO-F35-40-UNV-01-D10	3500K, 18.5W, 72lm/W	0-10V	CEILING MOUNT TRACK LIGHTS REFER TO THE DRAWINGS FOR HEAD QUANITIES
C	GOTHAM INCITO	ICO2-35-AR-LSS-45D-MVOLT-UGZ	3500K. 1000lm	0-10V	2" ROUND POT LIGHTS
D	LEDALITE SILKSPACE	42-24-D1-ST-L-8B-E-S-7-D-E-D	3500K, 3000lm	0-10V	2'X4' RECESSED LUMINAIRES
L	U TECHNOLOGY ULTRA FLEX	UT-UFV-24V-IP68-30K-'S'TRACK-IN-LINE	3000K, 200lm /FT	0-10V	FLEXIBLE LED LINEAR LUMINIARE. CONFIRM MOUNTING LOCATION WITH THE ARCHITECT PRIOR TO INSTALLATION
G	LEDALITE	TM-2-1-L-935-W-40	3000K, 4000lm	0-10V	WALL MOUNT LINEAR LUMINIARE
H	BEGA	66516-K30-BLK	3500K, 1000lm	0-10v	EXTERIOR WALL MOUNT LUMINAIRE
M	DAY-BRITE	FSSEZ-4-40L-835-UNV-DIM	3500K, 4000lm	0-10v	4' UTILITY STRIP LIGHT
N	FC OUTDOOR LIGHTING	FCBT690-UNV-42-30K19L-SLE-LD	3000K, 1915lm	0-10v	42" TALL BOLLARD. CONFIRM FINAL COLOR WITH THE ARCHITECT PRIOR TO ORDERING

NOTES:
1. LUMINAIRE SPECIFIED BY INTERIOR DESIGNER. CONFIRM EXACT MODEL AND FINISH WITH INTERIOR DESIGNER PRIOR TO ORDERING.
2. ALL APPROVED ALTERNATES ARE TO MATCH THE SPECIFIED LUMINAIRES WATTAGE, LUMEN OUTPUT, CORRELATE COLOR TEMPERATURE, FINISH AND ANY OPTIONAL ACCESSORIES.
3. ALL APPROVAL REQUESTS MUST MEET OR EXCEED THE PERFORMANCE, MATERIALS, EFFICIENCY, QUALITY, WARRANTY AND CONSTRUCTION OF THE SPECIFIED LUMINAIRE.
4. ALL APPROVAL REQUESTS MUST BE SUBMITTED A MINIMUM OF 5 BUSINESS DAYS PRIOR TO TENDER CLOSE. LATE SUBMISSIONS WILL NOT BE ACCEPTED OR REVIEWED.
5. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO ENSURE ALL FIXTURES SUPPLIED FOR THE PROJECT ARE AS SPECIFIED OR APPROVED DURING TENDER. ANY UNAPPROVED PACKAGES WILL NOT BE CONSIDERED AND ANY ADDITIONAL COSTES TO PROVIDE THE SPECIFIED/APPROVED PACKAGE ARE SOLELY THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

PANELBOARD SCHEDULE

JOB NO./NAME : 1-21-0081/LAHH
PANEL : S
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTER
LOCATION : STUDIO
MOUNTING : RECESSED
NO. CIRCUITS : 24
BUS SIZE : 100A
SYSTEM FAULT RATING : 10kA
FEED THROUGH LUGS : NO
TUBS : 1
MAIN BREAKER : 60A

DESCRIPTION	BRK	POLE	CIRC	CIRC	POLE	BRK	DESCRIPTION
LIGHTS	20	1	1	2	1	20	RECEPTACLE
LIGHTS	20	1	3	4	1	20	RECEPTACLE
EXIT SIGN	15	1	5	6	1	15	CF-1
			7	8	2	15	FCU
SPARE	15	1	9	10			
SPARE	15	1	11	12	2	15	FCU
SPARE	15	1	13	14			
SPARE	15	1	15	16	1	20	SPARE
			17	18	1	20	SPARE
			19	20	1	20	SPARE
			21	22	1	20	SPARE
			23	24			

GFCI BREAKER *
ACFI BREAKER **
REFER TO SINGLE LINE DIAGRAM

PANELBOARD SCHEDULE

JOB NO./NAME : 1-21-0081/LAHH
PANEL : H
SYSTEM : 120/208V, 3PH, 4W
TYPE : SERVICE RATED
LOCATION : ELECTRICAL ROOM
MOUNTING : SURFACE
NO. CIRCUITS : 84
BUS SIZE : 200A
SYSTEM FAULT RATING :
FEED THROUGH LUGS : NO
TUBS : 1
MAIN BREAKER : 200A

DESCRIPTION	BRK	POLE	CIRC	CIRC	POLE	BRK	DESCRIPTION
STUDIO 102	60	3	1	2	3	60	STUDIO 104
			3	4			
			5	6			
STUDIO 103	60	3	7	8	1	20	EXTERIOR LIGHTING
			9	10	1	20	EXTERIOR LIGHTING
			11	12	1	20	EXTERIOR LIGHTING
LIGHTS	20	1	13	14	1	15	EXIT SIGNS
LIGHTS	20	1	15	16	1	15	SERVICE ROOM LIGHTS
KITCHEN REC	20	1	17	18	1	15	FRIDGE
RANGE HOOD FAN	15	1	19	20	1	20	COUNTER TOP REC
RANGE	50	2	21	22	1	20	COUNTER TOP REC
			23	24	1	20	JANITOR REC
BATHROOM REC	15	1	25	26	1	20	ELECTRICAL ROOM REC
BASEBOARD HEATER	30	2	27	28	1	15	DATA RACK REC
			29	30	1	15	IAP
FORCE FLOW HEATER	30	2	31	32	1	15	COMMUNICATIONS REC
			33	34	1	15	COMMUNICATIONS REC
CF-4	15	1	35	36	2	15	MCU-1
FCU 4.1	15	2	37	38			
			39	40	2	15	MCU-2
FCU4.2	15	2	41	42			
			43	44	3	50	DHWT
HP-1	40	2	45	46			
			47	48			
EF-1/EF-2	15	1	49	50	3	20	DH-1
ERV-1	20	3	51	52			
			53	54			
			55	56	2	15	FCU-5
RECEPTACLES	20	1	57	58			
DIGITAL METER REC	15	1	59	60	2	30	BASEBOARD HEATER
SANITARY SUMP	15	3	61	62			
			63	64	1	15	ACS
			65	66	1	20	EXTERIOR REC
SPARE	15	1	67	68	1	29	EXTERIOR REC
SPARE	15	1	69	70	1	20	SPARE
SPARE	15	2	71	72	1	20	SPARE
			73	74	2	20	SPARE
			75	76			
			77	78			
			79	80			
			81	82			
			83	84			

REFER TO SINGLE LINE DIAGRAM

NOT FOR CONSTRUCTION – FOR REVIEW ONLY

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PROFESSIONAL ENGINEER P. C. BJORNERT # 45113 PROVINCE OF BRITISH COLUMBIA
2023-03-31 Permit to Practice No. 1000135

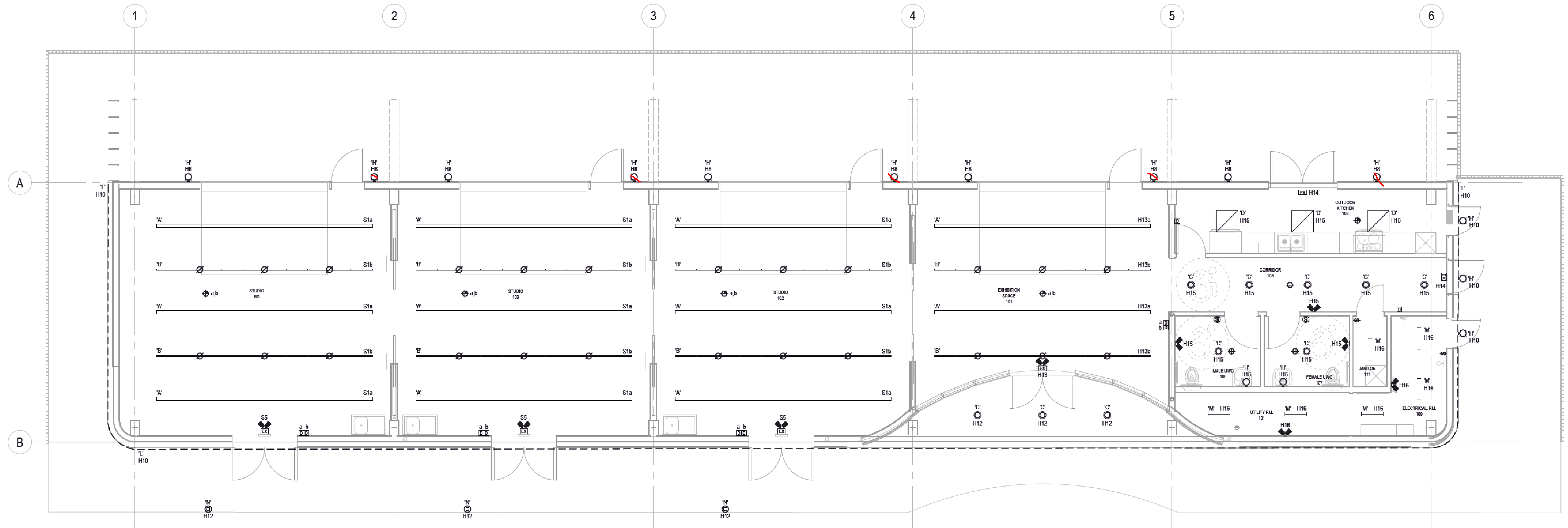
Arts and Heritage Hub

Ladysmith, BC

Client	Designed/Drawn By	Reviewed By	Sheet Number
Town of Ladysmith	BAK/TS	PB	E1.1

Project Number	Sheet Name
0121.0081	ELECTRICAL SCHEDULES AND DETAILS

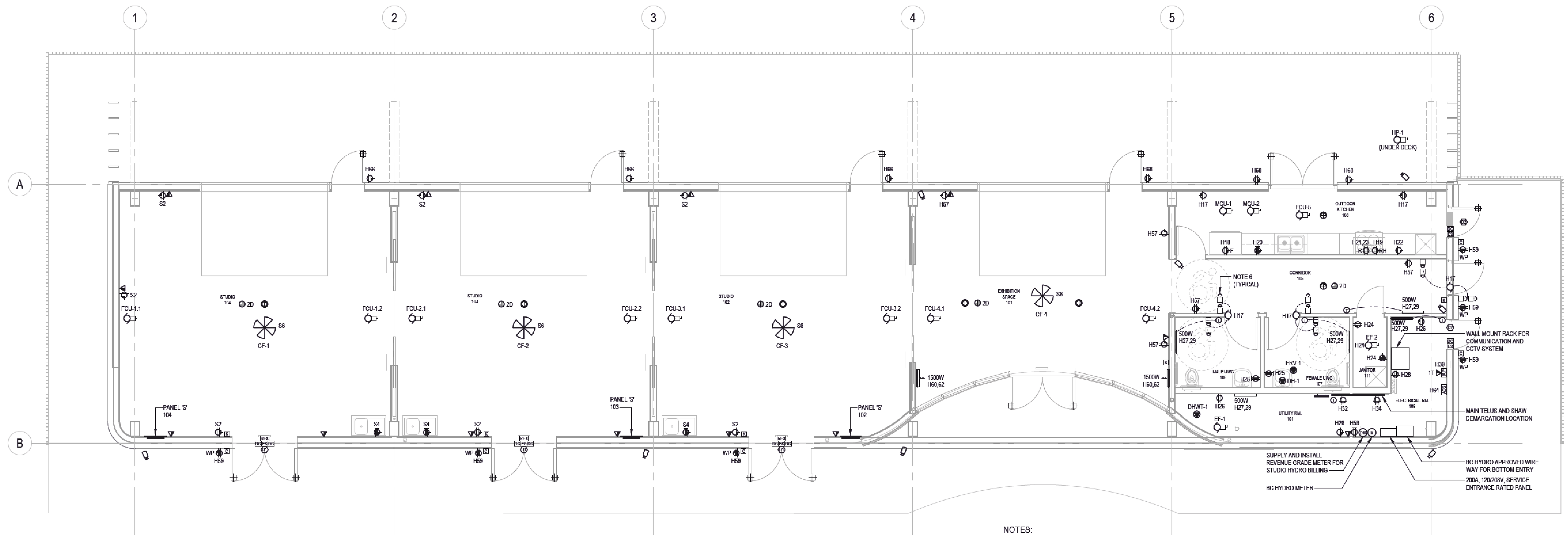
Scale	Date	Issue No.	Issued For	Revision
AS NOTED	03/31/23	1	BUILDING PERMIT	2
	03/31/23	2	TENDER	



1 E2.0 FLOOR PLAN LIGHTING LAYOUT
3/16"=1'-0"

NOTES:

1. SUPPLY AND INSTALL WAVELINX WIRELESS LIGHTING CONTROL IN EACH STUDIO SPACE AND COMMON AREAS.
2. EXTERIOR LIGHTING TO BE CONTROLLED BY AN ASTRONOMICAL TIME CLOCK. COORDINATE WITH THE END USER FOR EXACT TIMES.



1
2
3
4
5
6
A
B
STUDIO 104
STUDIO 103
STUDIO 102
EXHIBITION SPACE 101
OUTDOOR KITCHEN 108
CORRIDOR 105
PANEL 'S' 104
PANEL 'S' 103
PANEL 'S' 102
NOTE 6 (TYPICAL)
HP-1 (UNDER DECK)
WALL MOUNT RACK FOR COMMUNICATION AND CCTV SYSTEM
MAIN TELUS AND SHAW DEMARCATION LOCATION
SUPPLY AND INSTALL REVENUE GRADE METER FOR STUDIO HYDRO BILLING
BC HYDRO METER
BC HYDRO APPROVED WIRE WAY FOR BOTTOM ENTRY
200A, 120/208V, SERVICE ENTRANCE RATED PANEL

2 E2.0 FLOOR PLAN POWER AND SYSTEMS
3/16"=1'-0"

NOTES:

1. CONFIRM ALL EXTERIOR CAMERA LOCATIONS WITH ARCHITECTURAL DRAWINGS.
2. SUPPLY AND INSTALL ALL REQUIRED WIRING AND DEVICES FOR A COMPLETE AND OPERATIONAL INTRUSION DETECTION SYSTEM. REFER TO SPECIFICATIONS FOR PRODUCT INFORMATION.
3. SUPPLY AND INSTALL ALL REQUIRED DEVICES AND WIRING FOR A COMPLETE AND OPERATIONAL CCTV SYSTEM.
4. SUPPLY AND INSTALL ALL REQUIRED DEVICES AND WIRING FOR A COMPLETE AND OPERATIONAL ACCESS CONTROL SYSTEM.
5. PROVIDE WIRELESS ACCESS DEVICES AS INDICATED ON THE DRAWINGS. APPROVED PRODUCT IS CISCO 9136 2.4HTZ.
6. TWO(2) PUSH BUTTONS TO BE PLACED A MINIMUM OF 600mm FROM THE DOOR. PUSH BUTTONS HEIGHTS ARE TO BE 150-300mm AND 900-1100mm ABOVE FINISHED FLOOR.

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P. C. BJORNERT
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PROVINCE BRITISH COLUMBIA
2023-03-31
Permit to Practice

Arts and Heritage Hub

Ladysmith, BC

Client: Town of Ladysmith		Designed/Drawn By: BAK/TS	Reviewed By: PB	Sheet Number: E2.0
Project Number: 0121.0081	Sheet Name: FLOOR PLAN ELECTRICAL LAYOUTS			
Scale: AS NOTED	Date: 03/31/23	Issue No.: 1	Issued For: BUILDING PERMIT	Revision: 2
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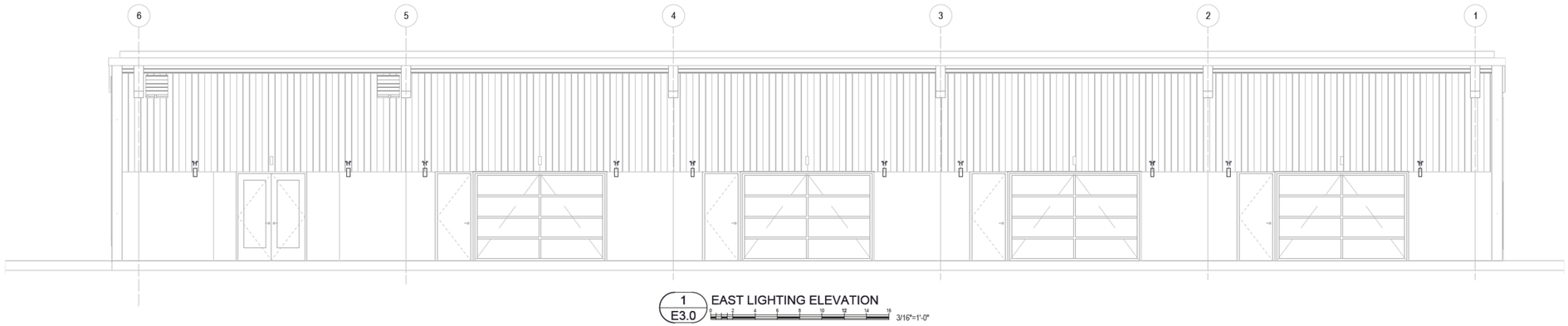
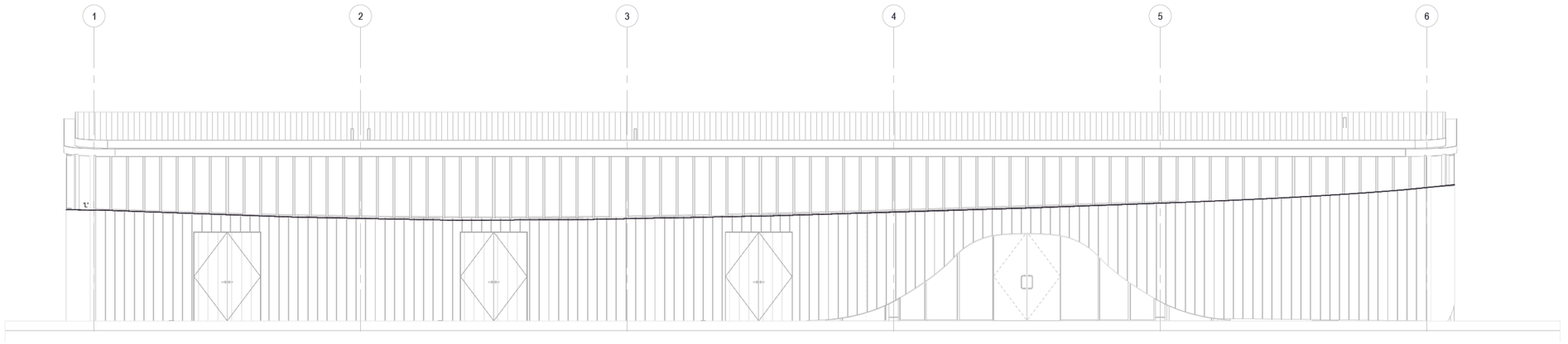


1 / E3.0 EAST LIGHTING ELEVATION
3/16"=1'-0"

2 / E3.0 NORTH LIGHTING ELEVATION
3/16"=1'-0"

3 / E3.0 SOUTH LIGHTING ELEVATION
3/16"=1'-0"



4 / E3.0 WEST LIGHTING ELEVATION
3/16"=1'-0"

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Arts and Heritage Hub

Ladysmith, BC

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Project Number: 0121.0081	Sheet Name: ELECTRICAL ELEVATIONS				
Scale: AS NOTED	Date: 03/31/23	Issue No.: 1	Issued For: BUILDING PERMIT		Revision: 2
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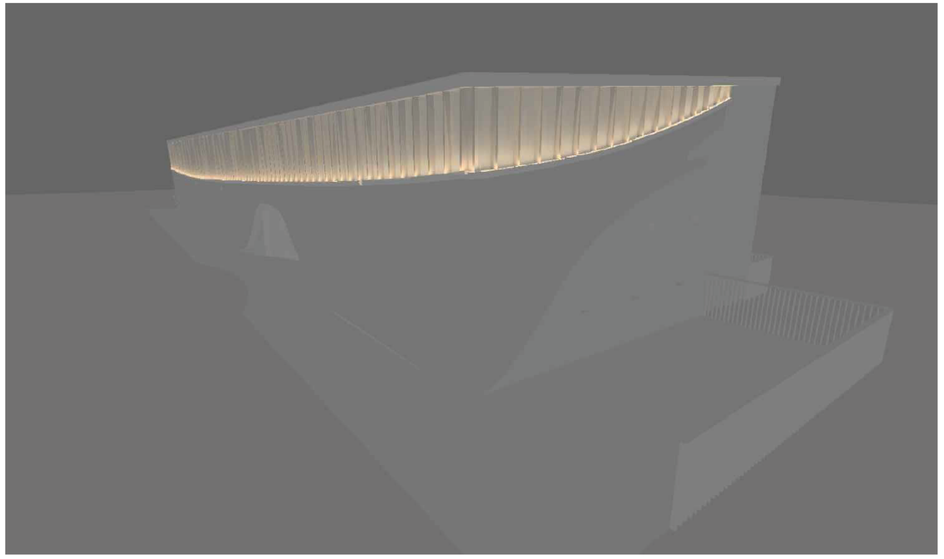
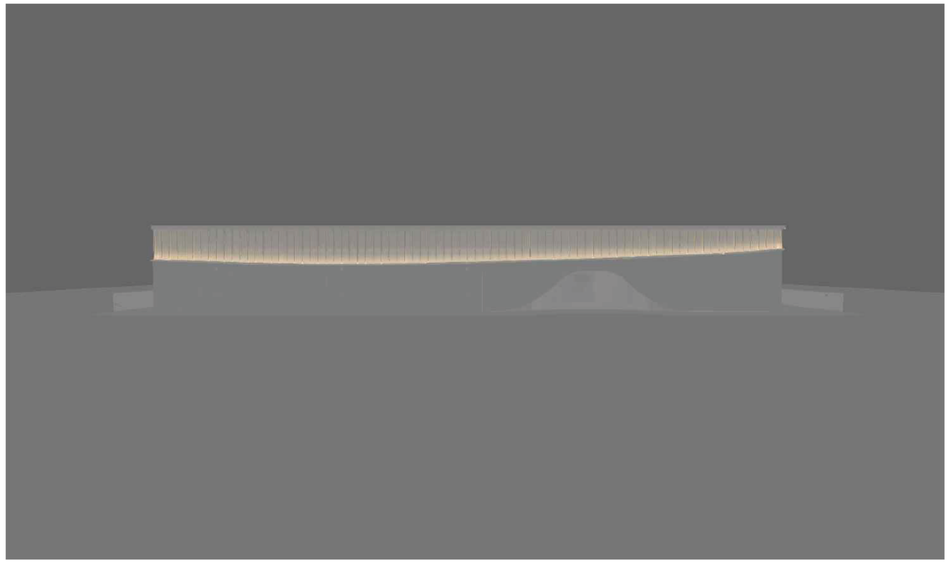


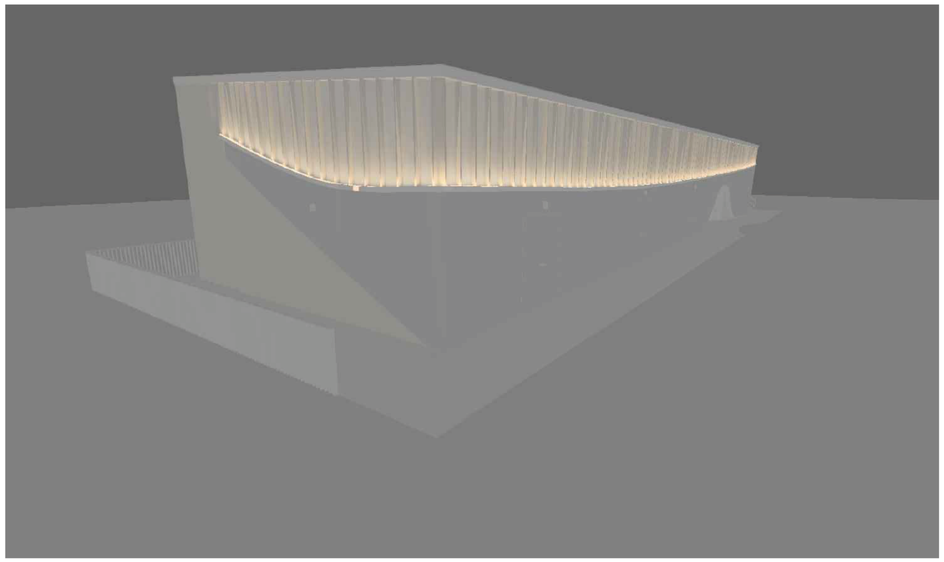
1 / E3.1 SOUTHWEST LIGHTING MODEL

NOT TO SCALE



2 / E3.1 WEST LIGHTING MODEL

NOT TO SCALE



3 / E3.1 NORTHWEST LIGHTING MODEL

NOT TO SCALE

NOT FOR CONSTRUCTION – FOR REVIEW ONLY

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Ladysmith, BC

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Sheet Number: **E3.1**

Revision: 2

1. GENERAL

.1 GENERAL REQUIREMENTS, INSTRUCTIONS TO BIDDERS, THIS SPECIFICATION AND ANY ADDENDA HERETO FORM PART OF THE CONTRACT DOCUMENTS AND SHALL BE READ IN CONJUNCTION WITH THEM. WORK TO INCLUDE THE FURNISHING OF ALL LABOR AND MATERIALS, UNLESS SPECIFIED OTHERWISE, TO COMPLETE AND PUT INTO OPERATING CONDITION ALL ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.

.2 IT IS THE INTENT OF THE WORK TO PROVIDE COMPLETE, NEATLY FINISHED, AND OPERATIONAL SYSTEMS AND ANY LABOR, MATERIAL, PERMITS, LICENSES, APPROVALS AND INSPECTIONS REQUIRED FOR COMPLETION OF THE WORK, WHETHER SPECIFICALLY MENTIONED IN THE DRAWINGS OR SPECIFICATIONS OR NOT, ARE TO BE INCLUDED IN THE TENDERED PRICE.

.3 RESPONSIBILITY AS TO WHICH TRADE PROVIDES REQUIRED ARTICLES OR MATERIALS RESTS SOLELY WITH THE GENERAL CONTRACT TRADE. EXTRAS WILL NOT BE CONSIDERED BASED ON GROUNDS OF DIFFERENCE OF INTERPRETATION OF SPECIFICATIONS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.

.4 THE DRAWINGS AND SPECIFICATIONS FOR THE COMPLETE WORKS, INCLUDING ALL OF THOSE RELATED TO OTHER TRADES ARE TO BE EXAMINED BEFORE SUBMITTING TENDERS. ALL ELECTRICAL AND COMMUNICATIONS REQUIREMENTS INDICATED ARE TO BE INCLUDED IN THE SCOPE OF THE WORK.

.5 CLEAN UP AND REMOVE ALL UNUSED WIRING AND CONDUITS.

.6 REMOVE AND REINSTALL EXISTING DEVICES TO FACILITATE CONSTRUCTION AS REQUIRED.

.7 CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHT WITH PROJECT COORDINATOR ON SITE PRIOR TO INSTALLATION.

.8 APPLICABLE CODES AND STANDARDS
.1 CANADIAN ELECTRICAL CODE - 2018 EDITION
.2 BC BUILDING CODE - 2018 EDITION
.5 NECB - 2017 EDITION
.6 CAN/ULC STANDARDS
.7 STANDATA
.8 TIA/EIA WIRING STANDARDS
.9 AFC - 2019 EDITION
.10 CSA-C282:19 EMERGENCY POWER SUPPLY FOR BUILDINGS

2. DRAWINGS AND SPECIFICATIONS

.1 DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR BY ONE IS TO BE BINDING AS IF CALLED FOR BY BOTH.

.2 SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS THAT LEAVES THE ELECTRICAL TRADE IN DOUBT AS TO TRUE INTENT AND MEANING, OBTAIN RULING FROM THE ENGINEER BEFORE SUBMITTING TENDER, OR ALLOW FOR THE MOST EXPENSIVE ALTERNATIVE.

3. EXAMINATION OF OTHER DRAWINGS

.1 THE ELECTRICAL CONTRACTOR IS TO EXAMINE CAREFULLY STRUCTURAL, ARCHITECTURAL AND MECHANICAL DRAWINGS, AND THE WORK OF OTHER TRADES AND ENSURE THAT THE WORK UNDER THIS CONTRACT CAN BE SATISFACTORILY CARRIED OUT WITHOUT CHANGES TO THE BUILDING AS SHOWN ON THE PLANS. SHOULD ANY DIFFICULTY ARISE SHOWING CONFLICT WITH, OR REQUIRING ADDITIONAL WORK BEYOND THE WORK OF THESE DRAWINGS, BRING THIS MATTER TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING TENDER.

4. UNIFORMITY OF EQUIPMENT

.1 UNLESS OTHERWISE SPECIFIED, UNIFORMITY OF MANUFACTURE IS TO BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT.

5. STANDARDS OF MATERIAL AND WORK

.1 ALL MATERIALS ARE TO BE NEW AND OF THE QUALITY SPECIFIED, AND SHALL BE APPROVED BY CSA OR EQUIVALENT AGENCY RECOGNIZED IN [BRITISH COLUMBIA].

.2 ALL WORK SHALL BE EXECUTED IN A NEAT AND TIDY MANNER BY QUALIFIED TRADESPEOPLE. THE ELECTRICAL CONTRACTOR SHALL KEEP A COMPETENT FOREPERSON AND NECESSARY ASSISTANTS ON THE SITE DURING THE PROGRESS OF THE WORK.

.3 ALL MATERIAL AND INSTALLATION SHALL MATCH BUILDING STANDARD UNLESS IT IS NOTED OTHERWISE ON THE DRAWINGS.

6. RECORD PLANS

.1 THE ENGINEER WILL FURNISH TO THE ELECTRICAL TRADE ONE SET OF DRAWINGS TO BE USED FOR RECORD PURPOSES. THE ELECTRICAL TRADE IS TO ACCURATELY RECORD ON THESE PRINTS ALL REVISIONS TO THE ORIGINAL PLANS THAT ARE MADE ON SITE DURING CONSTRUCTION.

.2 ARRANGE AND PAY FOR THE RE-DRAWING OF THE ELECTRICAL TENDER PACKAGE INCLUDING ALL ADDENDA, CCN'S AND SITE INSTRUCTION DURING BIDDING AND CONSTRUCTION. CONTRACTOR TO INCORPORATE ANY "AS-BUILT" CHANGES TO REPRODUCIBLE PLANS AND ISSUE THEM AS "RECORD DRAWINGS". THESE CHANGES SHALL BE OF A SIMILAR QUALITY OF PRESENTATION AS THE ORIGINAL PLANS. UPON COMPLETION A SET OF *.PDF'S AND BOUND *.DWG FILES ARE TO BE INCLUDED ON DISK OR USB DRIVE FOR FINAL SUBMISSION. NOTE: ALL PLANS WHETHER REQUIRING AS-BUILT CHANGES OR NOT, SHALL BE INCLUDED IN THIS SET.

.3 SHOULD THE CONTRACTOR REQUIRE THE ELECTRICAL CONSULTANT TO PREPARE THE "RECORD DRAWINGS", THE COST WOULD BE $350 PER SHEET, UNLESS MINIMAL CHANGES HAVE BEEN ACCRUED, A QUOTE FOR REVIEWING RECORD DRAWINGS COST MAY BE REQUESTED.

.4 UPDATE COSTS FOR THE REVIT MODEL WILL BE DETERMINED BASED ON THE EXTENT OF THE WORK REQUIRED. CONTRACTOR TO CONFIRM THIS COST WITH THE CONSULTANT. REVIT RECORD DRAWINGS ARE TO BE SAVED IN *.DWG FORMAT. UPON COMPLETION A SET OF *.PDF'S, BOUND *.DWG FILES AND A COPY OF THE REVIT FILE (WITH VERSION NOTED) ARE TO BE INCLUDED ON DISK OR USB DRIVE FOR FINAL SUBMISSION.

7. SHOP DRAWINGS

.1 THE ELECTRICAL CONTRACTOR IS TO SUBMIT TO THE ENGINEER, FOR REVIEW, SHOP DRAWINGS OF MAJOR ELECTRICAL EQUIPMENT. SUCH EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO SWITCHGEAR, PANELBOARDS, SERIES-RATED BREAKER COMBINATIONS, FIXTURES AND FITTINGS NOT PROVIDED BY THE OWNER.

.2 ALL DRAWINGS ARE TO BE SUBMITTED IN TRUE DIGITAL PDF FORMAT (NO SCANS) AND A REVIEWED COPY WILL BE RETURNED TO THE COORDINATING PROFESSIONS FOR DISTRIBUTION TO THE ELECTRICAL TRADE.

.3 THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS TO BE FOR GENERAL DESIGN ONLY AND WILL NOT RELIEVE THE ELECTRICAL TRADE OR SUPPLIERS FROM RESPONSIBILITY FOR ERRORS, PROPER FITTING, CONSTRUCTION OF WORK, AND FURNISHING OF MATERIALS. REVIEW WILL NOT BE CONSTRUED AS APPROVING DEPARTURES FROM CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED. THE ELECTRICAL TRADE IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.

.4 PROVIDE SHOP DRAWINGS FOR THE FOLLOWING ELECTRICAL PRODUCTS:
.1 POWER DISTRIBUTION EQUIPMENT
.2 LUMINAIRES
.3 LIGHTING CONTROLS
.4 WIRING DEVICES
.5 STRUCTURED WIRING COMPONENTS AND EQUIPMENT
.6 SECURITY SYSTEM
.7 FIRE STOPPING SYSTEM
.8 BUILDING ACCESS CONTROL SYSTEM
.9 ELECTRICAL METERING EQUIPMENT
.10 CCTV CAMERA SYSTEM
.11 EMERGENCY LIGHTING SYSTEM
.12 EXIT LIGHTING SYSTEM
.13 SEISMIC SYSTEM DETAILS

8. GUARANTEE WARRANTY

.1 THE ELECTRICAL TRADE SHALL FURNISH A WRITTEN GUARANTEE WARRANTY, SIGNED BY AUTHORIZED PERSONNEL, STATING:
.1 THAT ALL WORK EXECUTED UNDER THIS CONTRACT WILL BE FREE FROM DEFECTS OF MATERIAL AND WORK FOR A PERIOD OF 1 YEAR FROM DATE OF FINAL ACCEPTANCE.
.2 THE ABOVE PARTIES FURTHER AGREE TO, AT THEIR OWN EXPENSE, REPAIR AND REPLACE ALL SUCH DEFECTIVE WORK, AND OTHER WORK DAMAGED THEREBY, WHICH FAILS OR BECOMES DEFECTIVE DURING THE TERM OF THE GUARANTEE WARRANTY PROVIDED THAT SUCH FAILURE IS NOT DUE TO IMPROPER USAGE.
.3 THE PERIOD OF THE GUARANTEE SPECIFIED WILL IN NO WAY SUPPLANT ANY OTHER GUARANTEE OF A LONGER PERIOD BUT BE BINDING ON WORK NOT OTHERWISE COVERED.

9. OPERATING AND MAINTENANCE MANUALS

.1 SUBMIT THREE (3) SETS OF OPERATING AND MAINTENANCE MANUALS FOR ELECTRICAL SYSTEMS PROVIDED IN THIS CONTRACT. INCLUDE DESCRIPTIVE AND TECHNICAL DATA, ALL SHOP DRAWINGS, OPERATING PROCEDURES, ROUTINE AND PREVENTATIVE MAINTENANCE, WIRING DIAGRAMS, SPARE PARTS LIST, WARRANTIES, SERVICE COMPANIES, SUPPLIERS OF REPLACEMENT PARTS, TEST RESULTS, FIRE ALARM CERTIFICATE OF VERIFICATION, ELECTRICAL INSPECTION AUTHORITY CERTIFICATE, CONTRACT GUARANTEE. PROJECT PERSONNEL CONTACT LIST, COMMISSIONING TEST REPORTS AND PRODUCT SUPPORT CONTACT INFORMATION.

.2 SUBMIT DOCUMENTATION IN GREEN COLOURED HEAVY DUTY THREE RING BINDERS, WITH LETTERING ON SPINE IDENTIFYING: "OPERATING AND MAINTENANCE MANUAL", PROJECT TITLE AND SYSTEM NAMES AND ALSO SUBMIT ONE DIGITAL COPY ON A USB DRIVE AS PART OF PROJECT CLOSE-OUT.

.3 SUBMIT ONE COPY FOR APPROVAL BY CONSULTANT PRIOR TO ASSEMBLY OF FINAL SETS.

10. SETTING OUT OF THE WORK

.1 THE ELECTRICAL TRADE IS RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO THE INTENT OF DRAWINGS AND SPECIFICATIONS AND SHALL BEAR ALL COSTS INVOLVED IN MAKING THE CORRECTIONS. WHERE INTENT OF DRAWINGS AND SPECIFICATIONS IS NOT CLEAR, OBTAIN CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH WORK.

.2 THE ELECTRICAL TRADE IS TO GIVE WORK THEIR PERSONAL SUPERVISION, LAY OUT THEIR OWN WORK, DO ALL NECESSARY LEVELING AND MEASURING OR EMPLOY A COMPETENT ENGINEER TO DO SO. FIGURES, FULL SIZE AND DETAIL DRAWINGS TO TAKE PRECEDENCE OVER SCALE MEASUREMENTS.

.3 THE ELECTRICAL TRADE SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE OWNER OR ANY OTHER TRADE BY IMPROPER LOCATION OR CARRYING OUT OF THEIR WORK.

.4 THE ELECTRICAL TRADE, IN THE SETTING OUT OF THEIR WORK, IS TO MAKE REFERENCE TO ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS. THEY SHALL CONSULT WITH ALL RELEVANT TRADES IN SETTING OUT LOCATIONS FOR CONDUIT RUNS, LIGHTING FIXTURES, PANEL ASSEMBLIES, AND ALL OTHER ELECTRICAL EQUIPMENT, SO THAT CONFLICTS ARE AVOIDED AND SYMMETRICAL SPACING IS MAINTAINED.

.5 THE ELECTRICAL TRADE SHALL CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHTS WITH THE PROJECT COORDINATOR ON SITE PRIOR TO INSTALLATION.

.6 WHERE RECEPTACLES ARE MOUNTED ABOVE COUNTERS, BENCHES, SPLASHBACKS, OR OTHER FIXTURES, THEIR LOCATIONS AND MOUNTING HEIGHTS ARE TO BE COORDINATED WITH THE BUILT-IN UNITS. REFER TO ARCHITECTURAL DETAILS. WHERE RECEPTACLES OCCUR IN OUTSIDE WALLS WHERE HEATING UNITS ALSO OCCUR, RECEPTACLE HEIGHT TO BE ADJUSTED TO COORDINATE WITH THE HEATING UNITS.

.7 SWITCH MOUNTING HEIGHTS ARE TO BE COORDINATED WITH ARCHITECTURAL DETAILS AND SHALL BE ADJUSTED, IF REQUIRED, TO COORDINATE WITH PANELING, DADOS, MASONRY COURSE LINES, OR OTHER RELEVANT BUILDING FEATURES.

.8 WHERE OUTLET BOXES OCCUR IN EXTERIOR WALLS, THE ELECTRICAL TRADE IS TO ENSURE THAT THERE IS INSULATION BEHIND THE OUTLET BOXES TO PREVENT CONDENSATION THROUGH THE BOXES.

.9 ALLOW FOR WORK AFTER HOURS AS REQUIRED AND COORDINATE WITH OWNER/TENANTS IF APPLICABLE.

.10 CONTRACTOR TO COORDINATE ANY INTERRUPTIONS TO ADJOINING TENANTS IN ORDER TO AVOID ANY INCONVENIENCES TO SAID TENANT. IF NECESSARY CONTRACTOR TO DO ANY REQUIRED CONNECTIONS ON OFF HOURS.

11. EXAMINATION OF THE SITE

.1 PRIOR TO SUBMITTING TENDER, THE ELECTRICAL TRADE SHALL CAREFULLY EXAMINE THE SITE AND ASCERTAIN ALL CONDITIONS WHICH MAY AFFECT THEIR TRADE. NO ADDITIONAL MONEY WILL BE ALLOWED FOR WORK RESULTING FROM CONDITIONS THAT SHOULD HAVE BEEN NOTICED AND ACCOUNTED FOR DURING A THOROUGH EXAMINATION OF THE SITE.

12. CUTTING AND PATCHING

.1 THE GENERAL TRADE WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL INSTALLATION. STRUCTURAL MEMBERS MUST NOT BE CUT WITHOUT CONSENT OF THE ENGINEER.

.2 WHERE WORK DONE BY THE ELECTRICAL TRADE DAMAGES THE WORK OF OTHER TRADES, THE ELECTRICAL TRADE SHALL REPAIR AND MAKE GOOD SUCH DAMAGE TO THE SATISFACTION OF EACH TRADE CONCERNED AND THE ENGINEER.

.3 ALL PENETRATIONS SHALL BE SEALED WITH AN APPROVED FIRE STOP SYSTEM WITH APPROVED FIRE STOP MATERIALS LISTED BY THE SYSTEM SPECIFICALLY EMPLOYED ON THE PROJECT..

13. CLEANUP

.1 THE ELECTRICAL TRADE AND THEIR SUBTRADES ARE TO KEEP THE SITE FREE DURING CONSTRUCTION OF DEBRIS, BOXES, PACKING, AND OTHER MATERIALS ASSOCIATED WITH THE WORK OF THIS TRADE. ALL WASTE MATERIAL IS TO BE DISPOSED OF IN A SAFE AND ENVIRONMENTALLY RESPONSIBLE MANNER.

.2 UPON COMPLETION OF WORK, THE ELECTRICAL INSTALLATION SHALL BE LEFT IN A CLEAN AND FINISHED CONDITION TO THE SATISFACTION OF THE ENGINEER.

14. ACCESS DOORS

.1 THE ELECTRICAL TRADE IS TO SUPPLY AND INSTALL RATED ACCESS DOORS AS REQUIRED FOR PROPER SERVICING OF ALL ELECTRICAL WORK. ACCESS DOORS SHALL BE COMPLETE WITH NECESSARY FRAMES AND HINGED DOORS HELD CLOSED WITH CAPTIVE STUDS. ACCESS PANEL TO BE OF NOT LESS THAN 14 GAUGE STEEL, PRIME COAT FINISHED AND PAINTED ON THE JOB TO MATCH THE WALL OR CEILING FINISH.

.2 THE NUMBER OF ACCESS DOORS SHALL BE KEPT TO A MINIMUM.

.3 THE ELECTRICAL TRADE SHALL PROVIDE ACCESS PANELS IN THE DRYWALL CEILINGS FOR ALL ELECTRICAL JUNCTION BOXES AND EQUIPMENT IN ACCORDANCE WITH APPLICABLE CODES.

15. CODES, PERMITS AND INSPECTION

.1 THE ENTIRE INSTALLATION, INCLUSIVE OF MATERIAL AND LABOR, IS TO COMPLY WITH ALL THE REQUIREMENTS OF ALL BUILDING CODES AND AUTHORITIES HAVING JURISDICTION, THE CANADIAN ELECTRICAL CODE, AND REGULATIONS OF THE LOCAL INSPECTION DEPARTMENT.

.2 THE ELECTRICAL TRADE IS TO OBTAIN ALL PERMITS REQUIRED FOR EACH STAGE OF WORK, AND AFTER COMPLETION OF THE ENTIRE INSTALLATION FURNISH TO THE ENGINEER A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTION DEPARTMENT.

16. MECHANICAL EQUIPMENT AND EQUIPMENT SUPPLIED BY OTHERS

.1 UNLESS SPECIFIED OTHERWISE, THE ELECTRICAL CONTRACTOR IS TO SUPPLY AND INSTALL ALL REQUIRED CONDUIT, WIRING, ELECTRICAL FITTINGS AND CONNECTIONS FOR ALL MOTORS AND OTHER MECHANICAL EQUIPMENT, EVEN THOUGH SUCH MOTORS AND OTHER MECHANICAL EQUIPMENT MAY BE SUPPLIED BY OTHERS. WHERE REQUIRED BY THE DRAWINGS OR APPLICABLE REGULATIONS, DISCONNECT SWITCHES, STARTERS, OVERLOAD RELAYS AND OTHER NECESSARY PROTECTIVE DEVICES ARE TO BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. MOTORS AND CONTROLS SHALL BE FURNISHED BY THE SUPPLIER OF THE DRIVEN EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL INCLUDE ALL WORK AND CONNECTIONS REQUIRED TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL. EQUIPMENT SUPPLIED BY OTHERS SHALL BE APPROVED AND BEAR LABEL MEETING THE REQUIREMENTS OF THE CANADIAN ELECTRICAL CODE FOR THE USE IN CANADA OR AS REQUIRED BY LOCAL AUTHORITY FOR PROJECTS OUTSIDE OF CANADA.

.2 EQUIPMENT SUPPLIED BY OTHERS MAY INCLUDE BUT NOT BE LIMITED TO SUCH ITEMS AS GRILLE MOTORS AND INTERLOCKS, STOREFRONT AND INTERIOR SIGNAGE, STARTING DEVICES, MOTOR CONTROLLERS, FLOAT SWITCHES, ALARM DEVICES OR SYSTEMS, PUSH BUTTONS, EXHAUST FANS, DATA SYSTEMS, INTERCOMS AND STEREO SYSTEMS.

.3 THE ELECTRICAL CONTRACTOR IS TO CONFIRM MOTOR (OR OTHER EQUIPMENT) LOCATION AND SIZES WITH THE TRADE SUPPLYING THE MOTOR (OR OTHER EQUIPMENT) BEFORE COMMENCING ANY ASSOCIATED ELECTRICAL WORK.

.4 WHETHER INDICATED ON THE DRAWINGS OR NOT, EACH ROOFTOP MECHANICAL UNIT OR PIECE OF ROOFTOP MAINTENANCE EQUIPMENT IS TO HAVE A 5-20R GFCI RECEPTACLE INSTALLED WITHIN 7.5m AS PER THE CANADIAN ELECTRICAL CODE.

.5 WHETHER INDICATED ON THE DRAWINGS OR NOT, ALL DDC PANELS ARE TO BE INSTALLED WITH ONE (1) 15A DUPLEX TVSS RECEPTACLE ON A DEDICATED CIRCUIT AND ONE (1) DATA JACK.

.6 WHETHER INDICATED ON THE DRAWINGS OR NOT, ALL MECHANICAL EQUIPMENT IS TO HAVE A MINIMUM SHORT CIRCUIT CURRENT RATING (SCCR) TO MATCH THE PANEL TO WHICH IT IS CONNECTED.

.7 CONFIRM REQUIREMENTS FOR MECHANICAL EQUIPMENT WITH MECHANICAL TRADE PRIOR TO ROUGH-IN. ADJUST BREAKER SIZES, FEEDER SIZES, DISCONNECTS AND STARTERS WHERE APPLICABLE, AT NO ADDITIONAL COST.

17. TESTS

.1 ALL PORTIONS OF ELECTRICAL WORK ARE TO BE TESTED FOR SATISFACTORY OPERATION.

.2 BEFORE ENERGIZING ANY PORTION OF THE ELECTRICAL SYSTEM, THE ELECTRICAL TRADE SHALL PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ANY PROBLEMS DISCOVERED BY SUCH TESTING ARE TO BE CORRECTED BY THE ELECTRICAL TRADE AND THE CIRCUITS IN QUESTION RETESTED. THE RESULTS OF ALL FINAL TESTING SHALL BE PROVIDED TO THE ENGINEER IN REPORT FORM.

.3 UPON PROJECT COMPLETION, AND IMMEDIATELY PRIOR TO FINAL INSPECTION AND TAKEOVER, THE ELECTRICAL TRADE SHALL CHECK THE LOAD BALANCE ON ALL FEEDERS AND AT DISTRIBUTION CENTRES, LOAD CENTRES, AND PANELS. THESE CHECKS ARE TO BE CARRIED OUT BY TURNING ON ALL LOADS AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15%, THE CIRCUITS ARE TO BE RECONFIGURED AS NECESSARY TO BALANCE THE LOADS.

18. PAINTING AND FINISHES

.1 ALL ELECTRICAL FITTINGS, SUPPORTS, HANGER RODS, PULLBOXES, CHANNEL FRAMES, CONDUIT RACKS, OUTLET BOXES, BRACKETS, AND CLAMPS ARE TO HAVE A GALVANIZED FINISH OR A PAINT FINISH OVER CORROSION-RESISTANT PRIMER.

.2 ALL PANELS ARE TO BE FACTORY-FINISHED WITH SPRAY-ON AIR DRY ENAMEL. ALL ENAMEL TO BE APPLIED OVER CORROSION-RESISTANT PRIMER. MATTE OR FLAT TYPE FINISH PAINT WILL NOT BE ACCEPTED. ALL PANELS OR SIMILAR FACTORY-FINISHED UNITS THAT ARE SCRATCHED OR MARKED DURING INSTALLATION ARE TO BE TOUCHED UP WITH MATCHING SPRAY-ON AIR DRY LACQUER AND, IF REQUIRED TO PROVIDE A SATISFACTORY JOB, TO BE COMPLETELY REFINISHED.

.3 ALL 120/208V PANELBOARDS, PULLBOXES, AND OTHER ELECTRICAL CABINETS AND BOXES ARE TO BE FINISHED IN GREY ENAMEL.

19. CONDUIT AND EMT

.1 WHERE REQUIRED BY THE CANADIAN ELECTRICAL CODE, ALL WIRE AND CABLE IS TO BE INSTALLED IN CONDUIT OR EMT. WHERE APPROVED, AC90 OR TECK90 MAY BE USED.

.2 UNLESS OTHERWISE NOTED, CONDUIT AND EMT ARE TO BE CONCEALED IN ALL FINISHED AREAS. IN SERVICE AREAS, CONDUIT AND EMT SHALL BE RUN ON SURFACE UNLESS INDICATED OTHERWISE.

.3 SURFACE MOUNTED CONDUIT AND EMT ARE TO BE INSTALLED PARALLEL TO STRUCTURAL LINES, AND, WHERE BENDS OCCUR IN PARALLEL RUNS, THEY SHALL BE CONCENTRIC.

.4 RACEWAYS ARE TO BE INSTALLED FREE FROM DENTS AND BRUISES AND SHALL HAVE THEIR ENDS CAPPED, PLUGGED, OR SEALED AS NECESSARY TO PREVENT ENTRANCE OF DIRT OR MOISTURE.

.5 IN ALL AREAS SUBJECT TO MOISTURE, RAIN TIGHT FITTINGS MUST BE USED.

.6 ALL RACEWAY, EXCEPT WHERE OTHERWISE INDICATED, SHALL BE SIZED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.

.7 TECK90 OR SEAL TIGHT FLEXIBLE CONDUIT IS TO BE UTILIZED FOR CONNECTIONS TO MOTORS AND MOTOR CONTROLLERS.

.8 ALL UNDERGROUND CONDUIT SYSTEMS ARE TO BE OF APPROVED RPVC SCHEDULE 40 CONDUIT, COMPLETE WITH INSTALLED BONDING CONDUCTOR, AND INSTALLED AT OR BELOW THE DEPTH REQUIRED BY CODE. PROVIDE 150mm CLEAN SAND BEDDING ABOVE AND 75mm BELOW CONDUITS AND CONTINUOUS MARKING TAPE HALF DISTANCE BETWEEN GRADE AND TOP OF RACEWAY OR CABLE IN TRENCH. PROVIDE SUITABLE BACKFILL AND COMPACTION.

20. EXPANSION JOINTS

.1 WHERE CONDUITS ARE INSTALLED IN CONCRETE SLABS OR CROSS STRUCTURAL EXPANSION JOINTS, AN APPROVED EXPANSION FITTING SHALL BE INSTALLED.

21. WIRE AND CABLE

.1 ALL BUILDING WIRING IS TO BE COPPER, EXCEPT WHERE NOTED OTHERWISE.

.2 A MINIMUM CONDUCTOR SIZE OF #12 AWG COPPER IS TO BE USED, EXCEPT WHERE NOTED OTHERWISE.

.3 ALL CONDUCTORS ARE TO BE COLOR CODED THROUGHOUT THE INSTALLATION AS FOLLOWS:
- BONDING CONDUCTOR - GREEN
- NEUTRAL CONDUCTOR - WHITE
- 120/208V PHASE WIRES - RED, BLACK, AND BLUE
- GROUND WIRE - BARE GREEN

22. WIRING DEVICES & BOXES

.1 ALIGN ALL DEVICES AND PLATES PLUMB AND LEVEL WITH BUILDING STRUCTURAL LINES.

.2 ALL OUTLET BOXES ARE TO BE FLUSH MOUNTED AND INSTALLED WITHIN 6mm OF FINISH WITHOUT THE USE OF EXTENSION SLEEVES EXCEPT WHERE BOXES ARE LOCATED IN COMBUSTIBLE MATERIALS WHERE EXTENSION SLEEVES MAY BE USED.

23 LOCATION OF OUTLETS

.1 THE ENGINEER RESERVES THE RIGHT TO CHANGE THE LOCATION OF OUTLETS TO WITHIN 3 METRES OF POINTS INDICATED ON PLANS WITHOUT EXTRA CHARGE, PROVIDED THE ELECTRICAL CONTRACTOR IS ADVISED BEFORE INSTALLATION IS MADE.

.2 ELECTRICAL TRADE TO REFER TO ARCHITECTURAL ROOM ELEVATIONS FOR POSITIONS, AND MOUNTING HEIGHTS OF ALL OUTLETS, SWITCHES, INTERCOMMUNICATION, TELEPHONES, SPEAKERS, CLOCKS, ETC. POSITIONS SHOWN ON ARCHITECTURAL PLANS TO TAKE PRECEDENCE OVER POSITIONS OR MOUNTING HEIGHTS SHOWN ON ELECTRICAL PLANS.

24. PULL BOXES

.1 THE ELECTRICAL TRADE SHALL SUPPLY AND INSTALL PULLBOXES AS REQUIRED TO SUIT JOB CONDITIONS. PULLBOXES SHALL CONFORM TO CANADIAN ELECTRICAL CODE REQUIREMENTS. PULLBOXES TO BE BE FINISHED IN ENAMEL OVER CORROSION-RESISTANT PRIMER WITH SCREW-ON OR HINGED COVER. IN REMOVABLE CEILING AREAS, PULLBOXES ARE TO BE INSTALLED ABOVE THE CEILING.

25. SWITCHES AND RECEPTACLES

.1 DUPLEX RECEPTACLES, CSA TYPE 5-15R, OR 5-20R (AS INDICATED), 125V, SPECIFICATION GRADE U GROUND, WITH FOLLOWING FEATURES:
.1 WHITE UREA MOULDED HOUSING (EXCEPT AS NOTED).
.2 SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING.
.3 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
.4 EIGHT BACK WIRED ENTRANCES, FOUR SIDE WIRING SCREWS OR PIGTAIL CONNECTIONS.
.5 DOUBLE WIPE CONTACTS AND RIVETED GROUNDING CONTACTS.
.6 ACCEPTABLE MANUFACTURERS: BRYANT, LEVITON, PASS & SEYMOUR

.2 DUPLEX GFCI RECEPTACLES SHALL BE WEATHERPROOF 15A, 125V, COMPLETE WITH LED INDICATOR LIGHT.

.3 PROVIDE P-TOUCH LABELS FOR ALL RECEPTACLE LABELS.

.4 FOR ALL RECEPTACLES OTHER THAN STANDARD 15A DUPLEX RECEPTACLES, PROVIDE LAMACOID NAMETAGS GIVING AMP RATING, PHASE AND VOLTAGE.

26. WIRELESS LIGHTING CONTROLS

.1 WHERE WIRELESS LIGHTING CONTROLS IS INDICATED ON PLANS, INSTALL DEVICES AS RECOMMENDED BY MANUFACTURER.

.2 WIRELESS SWITCH SHALL BE SINGLE OR DOUBLE DECORA STYLE, SELF-POWERED WITHOUT USE OF BATTERIES AND SHALL TRANSMIT WIRELESS SIGNALS TO CONTROLLERS AND RECEIVERS TO DISTANCES OF 30m TO 300m DEPENDING ON LINE-OF-SIGHT BETWEEN SWITCHES AND CONTROLLERS. SWITCHES SHALL BE CAPABLE OF SWITCHING ON/OFF AND DIMMING.

.3 PROVIDE DMX CONTROLS WHERE LUMINAIRES WHERE INDICATED ON PLANS AND LUMINAIRE SCHEDULE. DMX INTERFACES SHALL WORK WITH SELF-POWERED SWITCHES AND SENSORS.

.4 RETAIN THE SERVICES OF THE MANUFACTURER'S REPRESENTATIVE TO SET-UP AND COMMISSION THE LIGHTING CONTROL SYSTEM PRIOR TO INDEPENDENT COMMISSIONING REQUIRED UNDER ASHRAE 90.1 AND THE BC BUILDING CODE.

.5 VACANCY/OCCUPANCY SENSORS SHALL BE WIRELESS AND EQUIPPED WITH 360 DEGREE COVERAGE, CEILING MOUNTED, SELF-POWERED WITH RECHARGEABLE BATTERIES AND BUILT-IN PHOTO-VOLTAIC BATTERY CHARGING SYSTEM.

.6 DAYLIGHT HARVESTING SENSORS SHALL BE WIRELESS, SELF-POWERED SELF-POWERED WITH RECHARGEABLE BATTERIES AND BUILT-IN PHOTO-VOLTAIC BATTERY CHARGING SYSTEM.

.7 CUBICLE SENSORS SHALL BE PASSIVE INFRA-RED WIRELESS WITH INTEGRATED SWITCH, POWERED THROUGH A USB CONNECTION.

.8 THE SYSTEM SHALL BE PROVIDED WITH INTERFACES AND GATEWAYS AND REQUIRED TO PROVIDE OWNER/USERS WITH REMOTE ACCESS VIA INTERNET AND CONTROL USING COMPUTERS OR SMART DEVICES (SMART PHONES, TABLETS).

.9 ACCEPTABLE PRODUCTS: COOPER WAVELINX.

27. SUPPORTS

.1 ALL CONDUIT, RACEWAYS, AND OTHER ELECTRICAL EQUIPMENT SHALL BE SECURELY AND ADEQUATELY SUPPORTED, IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND THE LOCAL BUILDING CODE REQUIREMENTS.

.2 WHERE INSERTS ARE REQUIRED IN CONCRETE, EXPANSION INSERTS, LEAD INSERTS OR PLASTIC INSERTS ARE TO BE USED IN DRILLED HOLES. SHOT DRIVEN PINS MAY BE USED IN STRUCTURAL CONCRETE ONLY WITH THE PERMISSION OF THE ENGINEER.

28. GROUNDING AND BONDING

.1 A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND THE ELECTRICAL INSPECTION DEPARTMENT.

.2 ALL METAL PARTS NOT CARRYING CURRENT, INCLUDING BUT NOT LIMITED TO, SECONDARY FEEDER CIRCUITS, EQUIPMENT AND PANELBOARD ENCLOSURES, METAL RACEWAYS, PULL AND JUNCTION BOXES, SHALL BE PROPERLY BONDED. METAL RACEWAYS SHALL UTILIZE DOUBLE LOCKNUTS AND OTHER FITTINGS WHERE NECESSARY TO PROVIDE BONDING CONTINUITY.

.3 A SEPARATE BONDING CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAY FEEDER RUNS, FLEXIBLE CONDUIT, AND IN CONDUIT INSTALLED IN SLAB OR UNDERGROUND.

.4 BOND ALL COMMUNICATIONS AND SECURITY SYSTEM EQUIPMENT TO GROUND INCLUDING RACKS, PATCH PANELS, CONTROL PANELS, AND OTHER ASSOCIATED COMPONENTS.

29. PANELS

.1 PROVIDE COMPLETE PANELBOARDS. UNLESS OTHERWISE INDICATED PANELBOARDS ARE TO BE 120/208V, 3PH, 4W OR 120/240V, 1Ø, 3W SOLID NEUTRAL DESIGN WITH SEQUENCE STYLE BUSSING AND FULL CAPACITY NEUTRAL WITH BOLT-ON CIRCUIT BREAKERS. WHERE DOUBLE NEUTRALS ARE INDICATED ON THE SINGLE LINE DIAGRAM, PROVIDE 200% RATED NEUTRAL PANELBOARDS.

.2 PROVIDE ALL CIRCUIT BREAKERS INDICATED PLUS A MINIMUM OF 2x15A-1P IN EACH PANEL. CIRCUIT BREAKERS TO BE RATED MINIMUM 10kA I.C. UNLESS OTHERWISE INDICATED.

.3 FOR RESIDENTIAL RECEPTACLE CIRCUITS, PROVIDE AFCI BREAKERS, UNLESS USING AFCI RECEPTACLES, AS REQUIRED BY THE CANADIAN ELECTRICAL CODE.

.4 PANELS ARE TO BE FLUSH MOUNTED IN PUBLIC AREAS AND SURFACE MOUNTED IN SERVICE ROOMS, ALL COMPLETE WITH ALL TRIM, LOCKABLE DOORS AND INSTALLATION HARDWARE.

.5 UPDATED TYPEWRITTEN PANEL DIRECTORIES SHALL BE PROVIDED FOR ALL PANELS.

.6 UTILIZE EXISTING PANELBOARDS AS INDICATED ON THE DRAWING. REUSE EXISTING BREAKERS WHERE POSSIBLE. PROVIDE NEW BREAKERS AS REQUIRED.

.7 BALANCE PANEL LOAD FOR EACH PHASE A, B AND C. ALLOW FOR RELOCATING CIRCUITS WITHIN PANEL BOARD TO BALANCE THE LOAD.

30. LIGHTING LUMINAIRES AND LIGHTING CONTROLS

.1 PROVIDE A NEW LIGHTING SYSTEM, COMPLETE AND FULLY OPERATIONAL AND IN CONFORMANCE WITH CANADIAN ELECTRICAL CODE AND CSA LISTING REQUIREMENTS. UNLESS NOTED OTHERWISE, ALL FIXTURES AND LAMPS ARE TO BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AS SPECIFIED IN THE DRAWINGS.

.2 ELECTRICAL TRADE TO INSTALL ALL LIGHTING LUMINAIRES COMPLETE WITH LAMPS, MOUNTING BRACKETS, BALLASTS AND ALL NECESSARY ACCESSORIES IN ACCORDANCE WITH THE LUMINAIRE TYPES SHOWN ON THE DRAWINGS, OR OTHERWISE SPECIFIED.

.3 ALL LUMINAIRES SHALL BE ALIGNED, AS APPROPRIATE, WITH ONE ANOTHER AND WITH STRUCTURAL LINES.

.4 ALL LUMINAIRES SHALL BE CLEANED AND LAMPED UPON COMPLETION OF WORK AND PRIOR TO FINAL ACCEPTANCE. UTILIZE MANUFACTURER'S APPROVED OR RECOMMENDED CLEANING SOLUTIONS.

.5 WHERE NO SWITCH IS INDICATED ON THE DRAWINGS FOR LIGHTING IN PUBLIC AREAS OF THE BUILDING, THE LUMINAIRES SHALL BE SWITCHED FROM THE PANEL. BREAKERS USED FOR SUCH SWITCHING SHALL BE SWITCH RATED.

.6 SWITCHES SHALL HAVE A CURRENT RATING NOT LESS THAN THAT OF THE CIRCUIT TO WHICH THEY ARE CONNECTED.

.7 ELECTRICAL TRADE TO SUPPLY AND INSTALL ALL LIGHTING CONTROLS WITH LINE VOLTAGE SWITCHES, DIMMER SWITCHES (RATED 1500W), LOW VOLTAGE SWITCHES, LIGHTING RELAYS, BARRIER AND ALL CONTROL WIRING AND COMPONENTS TO SUIT THE LAYOUT. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATION OF THE MANUFACTURER AND COMPLY WITH CODES.

.8 LOW VOLTAGE MASTER SWITCHES AND BUILDING LIGHTING CONTROL SHALL HAVE THE CAPABILITY TO TURN ON AND OFF ALL LIGHTING (120 AND 347 VOLT) WITH THE EXCEPTION OF LUMINAIRES ON EMERGENCY LIGHTING CIRCUITS OR UNSWITCHED NIGHT LIGHT CIRCUITS.

.9 COORDINATE LIGHTING CONTROL PROGRAMMING WITH THE BUILDING SUPERVISOR.

31. EXIT LIGHTING AND EMERGENCY LIGHTING

.1 EMERGENCY BATTERY PACKS SHALL BE LOADED SUCH THAT THE LOAD MAY BE OPERATED BY THE BATTERY PACK FOR AT LEAST 120 MINUTES.

.2 AFTER INSTALLATION OF EACH BATTERY PACK AND ALL OF ITS ASSOCIATED REMOTE HEADS, THE VOLTAGE AT EACH REMOTE HEAD AND AT THE BATTERY PACK IS TO BE MEASURED. WHERE THE VOLTAGE DROP FROM THE BATTERY TO A REMOTE HEAD EXCEEDS 5% OF THE NOMINAL BATTERY VOLTAGE, THE CIRCUITING OF LIGHTS AND THE SIZE OF WIRE IS TO BE RECONFIGURED TO REDUCE THE VOLTAGE DROP TO LESS THAN 5%.

.3 ALL EXIT AND EMERGENCY LIGHTING IS TO OPERATE AUTOMATICALLY AND IMMEDIATELY (FROM BATTERIES) UPON FAILURE OF NORMAL POWER SUPPLY.

.4 PROVIDE NEW EXIT LIGHTS MATCHING BUILDING STANDARD, EMERGENCY BATTERY UNITS, EMERGENCY REMOTE HEADS AND CONNECT LUMINAIRES TO EMERGENCY LIGHTING CIRCUIT AS SHOWN ON THE DRAWINGS.

.5 ALL SELF-CONTAINED UNIT EQUIPMENT IS TO BE CONNECTED TO LOCAL LIGHTING CIRCUIT AHEAD OF SWITCH.

32. SEISMIC PROTECTION

.1 THE ELECTRICAL TRADE SHALL PROVIDE SEISMIC RESTRAINT AND ANCHORAGE FOR ALL EQUIPMENT AND SERVICES IN ACCORDANCE WITH THE CURRENT EDITION OF THE B.C. BUILDING CODE, AND ALL APPLICABLE BUILDING BYLAWS.

.2 PROVIDE CERTIFIED PROFESSIONALLY SEALED SHOP AND PLACEMENT DRAWINGS WHERE APPLICABLE FOR ALL ELECTRICAL EQUIPMENT AND EQUIPMENT ASSEMBLIES SHOWING THE METHODS OF ATTACHMENT TO THE PARTICULAR STRUCTURE FOR EACH PIECE OF EQUIPMENT AND ASSEMBLY AND PROVIDE ANCHORAGE/ATTACHMENT DETAILS APPROVED AND SEALED BY A BC REGISTERED PROFESSIONAL ENGINEER.

.3 INCLUDE IN THE TENDERED PRICE ALL SERVICES OF THE PROFESSIONAL ENGINEER INCLUDING BUT NOT LIMITED TO PROVIDING LETTERS OF ASSURANCE FOR THE PROJECT IN RESPECT OF THE SEISMIC RESTRAINT OF ALL ELECTRICAL MATERIALS AND EQUIPMENT, CONDUCTING THE NECESSARY SITE REVIEWS AND PROVIDING A LETTER AT THE CONCLUSION OF THE PROJECT, CONFIRMING THAT ALL SEISMIC RESTRAINTS FOR THE ELECTRICAL WORKS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE ENGINEER'S INSTRUCTIONS.

33. COMMUNICATIONS (VOICE, DATA & TV) & SECURITY ROUGH-IN

.1 NO CONDUIT RUN SHALL EXCEED TWO 90 DEGREE BENDS AND ONE 45 DEGREE SWEEPING BEND.

.2 ALL COMMUNICATION BACKBOARDS ARE TO BE 21mm THICK, G1S, AND PAINTED WITH FIRE RETARDANT PAINT TO MATCH COLOR OF THE ROOM.

.3 THE INSTALLATION OF COMMUNICATIONS EQUIPMENT, AND CONDUIT TO BE USED FOR COMMUNICATION WIRES, SHALL COMPLY IN ALL RESPECTS WITH THE REQUIREMENTS OF TELUS AND SHAW.

.4 PROVIDE DOUBLE GANG BOX C/W SINGLE GANG MUD RING, OUTLET BOXES AND EMPTY CONDUITS C/W PULL STRING FOR COMMUNICATIONS OUTLETS AS SHOWN ON THE DRAWINGS.

.5 INSTALL 25mm EMT CONDUITS FROM EACH WALL MOUNTED COMMUNICATION OUTLET TO CEILING SPACE C/W BUSHING AT BOTH ENDS.

34. IDENTIFICATION

.1 IDENTIFY ALL MAJOR PIECES OF EQUIPMENT, INCLUDING BUT NOT LIMITED TO PANELBOARDS, ELECTRICAL CABINETS, AND BREAKERS IN PANELBOARDS WITH ENGRAVED LAMACOID LABELS, BLACK LETTERING ON WHITE BACKGROUND.

.2 PROVIDE TYPEWRITTEN DIRECTORIES IN ALL PANELS.

.3 PROVIDE LAMACOID NAMEPLATE ON EACH PANEL COVER TO IDENTIFY PANEL NAME, NUMBER OF PHASES, VOLTAGE, CURRENT RATING AND SOURCE OF FEEDER.

.4 IDENTIFY BRANCH CIRCUIT WIRES TO MEET CODE REQUIREMENTS.

.5 FIRE ALARM BREAKER TO BE PAINTED RED, PROVIDED WITH MECHANICAL BREAKER LOCKING DEVICE AND CLEARLY IDENTIFIED.

35. ALTERNATE SEPARATE PRICE

.1 ALL REQUESTS FOR ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER NOT LESS THEN 5 DAYS PRIOR TO THE CLOSE OF TENDER.

.2 THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ENSURING THAT ALTERNATE PRODUCTS MEET ALL SPACE, WEIGHT, CONNECTION, POWER, WIRING, AND PERFORMANCE REQUIREMENTS.

36. POWER DISTRIBUTION

.1 INSTALL A COMPLETE POWER DISTRIBUTION SYSTEM INCLUDING UNDERGROUND CONDUIT, SERVICE CONNECTIONS, GROUNDING, DISTRIBUTION EQUIPMENT, AND PANELBOARDS.

37. UNDERGROUND SERVICES

.1 A POLE MOUNTED TRANSFORMER AND POLE FOR THE SERVICE TO THE BUILDING WILL BE PROVIDED BY LOCAL UTILITY.

.2 ELECTRICAL TRADE TO PROVIDE SECONDARY DUCT AND CONDUCTORS IN ACCORDANCE WITH LOCAL UTILITY REGULATIONS.

.3 THREE 103mm SERVICE CONDUITS FROM TELEPHONE AND CABLE BACKBOARDS TO PROPERTY LINE FOR TELEPHONE AND CABLE TV SERVICE.

.4 INCLUDE ALL COSTS FOR UTILITY CONNECTIONS CHARGES IN THIS CONTRACT.

38. SERVICE ENTRANCE

.1 PULL BOX IN ACCORDANCE WITH LOCAL UTILITY REQUIREMENTS.

.2 MAIN SWITCH AND FUSES TO BE RATED 200A WITH MINIMUM 42kA INTERRUPTING CAPACITY.

39. UTILITY METER(S)

.1 TO BE INSTALLED IN ACCORDANCE WITH ALL LOCAL UTILITY REQUIREMENTS.

40. COMMUNICATION CABLING (COPPER)

.1 CAT 6 UTP CABLE SHALL BE FOUR PAIR, UNSHIELDED, TWISTED, 22 AWG TO 24 AWG, 100 OHM FT6, SOLID COPPER BY PANDUIT OR APPROVED EQUAL. TRANSMISSION REQUIREMENTS SHALL MEET OR EXCEED ALL REQUIREMENTS OF TIA/EIA-568-B.2 FOR CATEGORY 6 CABLING AND COMPONENTS.

.2 PATCH PANELS SHALL BE MODULAR PATCH PANEL. 24-PORT OR 48-PORT, HIGH DENSITY INDIVIDUAL CUT-OUTS FOR SNAP IN TYPE FEMALE 8P/8W.

.3 WALL MOUNT VERTICAL RACK WITH ENOUGH CAPACITY TO HOLD ALL SYSTEMS INDICATED ON THE DRAWINGS.

.4 WHERE CABLING IS INSTALLED IN CONDUIT LOCATED UNDER OR IN A SLAB-ON-GRADE, SUCH CABLING SHALL BE INSIDE-OUTSIDE PLANT RATED SUITABLE FOR WET LOCATIONS.

41. SECURITY

.1 SECURITY DEVICES AND CONTROL PANEL SHALL BE FROM SAME MANUFACTURER. DSC 4020 CONTROL PANEL OR APPROVED EQUIVALENT.

.2 SECURITY PANEL MUST HAVE MINIMUM NUMBER OF INPUTS FOR DEVICES AS SHOWN ON DRAWING WITH 20% SPARE CAPACITY. PANEL MUST BE CAPABLE OF INTERFACE WITH VISUAL ALARM DEVICES, AUDIBLE ALARM DEVICES, KEYPAD DEVICE, DOOR CONTACTORS, ALARM PUSHBUTTON, AND MOTION DETECTORS. PANEL MUST BE EQUIPPED WITH A SILENCE ALARM FEATURE AND BE ABLE TO SEND ALARM NOTIFICATION TO OFFSITE SECURITY LOCATION. PANEL MUST BE CAPABLE OF MONITORING FOR FAULT OR TAMPERING. EXACT SECURITY PANEL OPERATION SEQUENCE TO BE ESTABLISHED WITH BUILDING MANAGER AND PROGRAMMED.

.3 MOTION DETECTORS TO BE DUAL TECHNOLOGY , CEILING OR WALL MOUNTED, WIDE BEAM ANGLE TYPE OR APPROVED EQUAL.

.4 THE SECURITY SYSTEM SHALL INCLUDE:
.1 KEYPADS
.2 CONTROL PANELS
.3 POWER SUPPLIES
.4 DOOR CONTACTS
.5 MOTION DETECTORS
.6 A HORN
.7 REMOTE MONITORING CONNECTION
.8 CABLING, WIRING AND CONDUIT FOR POWER AND COMMUNICATIONS
.9 A 2-HOUR TRAINING SESSION TO PROVIDE OPERATING AND MAINTENANCE INSTRUCTIONS TO FACILITY OWNER

.5 PROVIDE HOME RUN FROM EACH DEVICE TO CONTROL PANEL AND A ZONE FOR EACH DEVICE ON THE SECURITY ALARM SYSTEM.

.6 ACCEPTABLE MANUFACTURE: DSC POWER SERIES NEO HARDWIRED

42. BUILDING ACCESS CONTROLS

.1 PROVIDE A FULLY OPERATIONAL BUILDING ACCESS CONTROL SYSTEM AS INDICATED ON PLANS WITH EQUIPMENT AND COMPONENTS AS FOLLOWS:
.1 CONTROL PANELS
.2 CARD READERS
.3 50 CARDS, 20 FOBS
.4 REQUEST TO EXIT MOTION SENSORS
.5 KEYPADS
.6 DOOR STATUS CONTACTS
.7 REMOTE DOOR-RELEASE PUSH-BUTTONS
.8 POWER SUPPLY UNITS FOR THE ACCESS CONTROL PANELS AND ELECTRIFIED DOOR HARDWARE DEVICES

.2 PROVIDE ALL WIRING, CONDUIT, CABLING AS REQUIRED FOR A COMPLETE OPERATIONAL SYSTEM.

.3 CONFIRM ALL WIRING REQUIREMENTS FOR DOOR STRIKES SUPPLIED BY DOOR HARDWARE SUPPLIER WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. MAKE ALL NECESSARY ADJUSTMENTS TO WIRE SIZE, ROUTING AND CONNECTIONS AS REQUIRED AT NO ADDITIONAL COSTS.

.4 INCLUDE FOR A 2-HOUR TRAINING SESSION WITH THE FACILITY OWNER TO PROVIDE INSTRUCTIONS FOR THE OPERATION AND MAINTENANCE OF THE SYSTEM.

.5 PROVIDE FOR ALL PROGRAMMING AND COMMISSIONING OF SYSTEM, INCLUDING SOFTWARE LICENSES.

.6 ACCEPTABLE MANUFACTURERS:
.1 CONTROL PANEL: KANTECH KT-400
.2 CARD READER: HID SIGNO
.3 REX MOTION SENSORS: KANTECH T-REX
.4 KEYPADS: HID SIGNO

43. IP VIDEO SURVEILLANCE (IPVS) CAMERA SYSTEM

.1 PROVIDE A FULLY FUNCTIONAL IPVS CAMERA SYSTEM COMPLETE WITH THE FOLLOWING:
.1 IPVS CAMERAS
.2 NETWORK VIDEO RECORDER AND SERVER (NVR)
.3 COMPUTER WORKSTATION
.4 SOFTWARE LICENSE
.5 RACKS, CABINETS AND IPVS CAMERA MOUNTING SYSTEM
.6 WIRING, CABLING, POWER SUPPLIES, PATCHING EQUIPMENT, OUTLETS AND DATA SWITCHES.

.2 IPVS SYSTEM SHALL BE POWERED OVER ETHERNET.

.3 PROVIDE CATEGORY 6 CABLING OUTLET JACKS AND PATCH PANEL. TEST IN ACCORDANCE WITH TIA/EIA-568-B.2.

.4 THE SYSTEM SHALL BE CAPABLE OF COMMUNICATION VIA INTERNET SUCH THAT THE BUILDING OWNER CAN REMOTELY ACCESS IPVS IMAGES.

.5 INCLUDE FOR A 4-HOUR TRAINING SESSION WITH THE FACILITY OWNER TO PROVIDE INSTRUCTIONS ON OPERATING AND MAINTAINING THE SYSTEM.

.6 ACCEPTABLE MANUFACTURERS:
.1 IPVS CAMERAS: AVIGILON 5MP 5.0C-H5SL-DO1-IR
.2 NVR/SERVER: AVIGILON ALL IN ONE VMA-AS3-24P24
.3 COMPUTER STATION: AVIGILON MONITORING WORKSTATION COMPLETE WITH 2X27" MONITORS
.4 VIDOE MANAGEMENT SOFTWARE: ACC 7.14
.5 VERTICAL WALL MOUNTED RACK: LEGRAND VWMSD-8RU-42-B OR EQUIVALENT

44. GENERAL CABLE REQUIREMENTS IN PLENUMS

.1 ALL CABLING INSTALLED INSIDE PLENUMS MUST BE FT6 HORIZONTAL FLAME AND SMOKE TESTED TO CSA C22.2 No 0.3-92 APPENDIX B AND TESTED IN ACCORDANCE WITH ANSI/NFPA STANDARD 262-1985 (UL-910). THE MAXIMUM FLAME SPREAD SHALL BE 1.50 METRES (4.92 FEET). THE SMOKE DENSITY SHALL BE 0.5 AT PEAK OPTICAL DENSITY AND 0.15 AT MAXIMUM AVERAGE OPTICAL DENSITY.

.2 OTHER CABLE DESIGNATIONS MEETING C(UL)/CEC CERTIFICATIONS, APPROVED AS COMMUNICATIONS CABLES MEETING THE REQUIREMENTS OF THE BI-NATIONAL STANDARD CSA C22.2 No 214/UL444 AND SECTION 60 OF THE CANADIAN ELECTRICAL CODE PART I (CEC) ARE ACCEPTABLE.

.3 PROVIDE SHOP DRAWINGS FOR ALL CABLES INSTALLED IN PLENUMS.

45. SURFACE RACEWAY

.1 SURFACE RACEWAY, WHERE SHOWN, SHALL BE TWO-COMPARTMENT STYLE, ALUMINUM IN CUSTOM COLOUR AS DIRECTED BY THE BUILDING OWNER.

.2 RACEWAY SHALL HAVE FACEPLATES FOR INSTALLATION OF RECEPTACLES AND DATA OUTLET JACKS.

.3 UNDER NO CIRCUMSTANCES SHALL SURFACE CONDUIT BE USED ON BRICK WALL SURFACE. PROVIDE FOR ALL TRANSITION PIECES, 90 DEGREE ANGLES AND VERTICAL 2-COMPARTMENT RACEWAY INTO ACCESSIBLE CEILING SPACES.

.4 RACEWAY FRONT COVERS SHALL BE REMOVABLE TO ALLOW ACCESS TO DEVICES AND WIRING INSIDE THE RACEWAY.

NOT FOR CONSTRUCTION – FOR REVIEW ONLY

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Arts and Heritage Hub

Ladysmith, BC

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